

1F108

IRFP-1325.02 (REV. 5/97)  
Previously RF-46522CORRES. CONTROL  
INCOMING LTR NO.

01414 RF 97

DUE DATE  
ACTION

## Department of Energy

ROCKY FLATS FIELD OFFICE  
P.O. BOX 928  
GOLDEN, COLORADO 80402-0928

000067577

SEP 23 1997

97-DOE-05409

DIST.	LTR	ENC
BACON, R.F.		
BENSUSSEN, S.J.		
BORMOLINI, A.M.		
BRAILSFORD, M.D.		
BUHL, T.R.		
BURDGE, L.		
CARD, R.G.		
COSGROVE, M.M.		
COULTER, W.L.		
CRAWFORD, A.C.		
DERBY, S.		
DIETERLE, S.E.		
FERRERA, D.W.		
GERMAIN, A.L.		
HARDING, W.A.		
HARROUN, W.P.		
HEDAH, T.G.		
HERRING, C.L.		
HILL, J.A.		
MARTINEZ, L.A.		
NORTH, K.		
OGG, R.N.		
PARKER, A.		
PHILLIPS, F.J.	X	X
RHOADES, D.W.		
RUSCITTO, D.G.		
SANDLIN, N.B.		
SPEARS, M.S.		
TILLER, R.E.		
TUOR, N.R.		
VOORHEIS, G.M.		
Shelton, B.	X	X
Evans, B.	X	X

COR. CONTROL	X	X
ADMIN. RECORD	X	X
PATS/T130G		

Reviewed for Addressee  
Corres. Control RFP9/23/97 SK  
Date By

Ref Ltr. #

DOE ORDER #

5400.1

Mr. Steve Tarlton  
RFCA Coordinator  
Colorado Department of Public Health and Environment  
4300 Cherry Creek Drive South  
Denver, CO 80246-1530

Dear Mr. Tarlton:

Enclosed is the Reconnaissance Level Characterization Report for the 891 Trailers A, L, M, and N; and the semi-trailer 900E. Kaiser-Hill had planned to transfer the 891 trailers to another federal agency before October 1, 1997. Trailer 900E is expected to be sold as surplus property.

However, areas of radiation thought to exceed release limits have been found on the outside of the 690 trailers, 444A, and 371G. This discovery has led to more extensive surveys on the outside of these 891 trailers before release is contemplated.

The enclosed report includes 8-10 surface radiation measurements on the outside of each trailer. None of these radiation measurements exceeded release limits; however, we have decided that a more extensive survey is necessary. We will apprise you of the results shortly.

If you have any questions, please call William Fitch at 966-4013.

Sincerely,

Steven W. Slaten  
RFCA Coordinator

Enclosure

cc w/Enc:  
T. Rehder, EPA  
D. Shelton, K-H  
B. Evans, K-H  
Administrative Record

SEP 23 1997  
RECEIVED  
RECORDS CENTER

ADMIN RECORD

IA-A-000799

1/121

Steve Tarlton  
97-DOE-05409

2

SEP 23 1997

cc w/o Enc:

J. Karpatkin, CED, RFFO

J. Legare, AMEC, RFFO

G. Hill, AMEC, RFFO

R. April, RLG, RFFO

R. Tyler, ER/WM, RFFO

F. Gerdeman, PCD, RFFO

W. Fitch, ER/WM, RFFO

S. Schiesswohl, CAMD, RFFO

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NORTH, K.		
OGG, R.N.		
PARKER, A.		
PHILLIPS, F.J.	X	X
RHOADES, D.W.		
RUSCITTO, D.G.		
SANDLIN, N.B.		
SPEARS, M.S.		
TILLER, R.E.		
TUOR, N.R.		
VOORHEIS, G.M.		
Shelton, D.	X	X
Evans, B.	X	X

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Steven W. Slaten  
RFCA Coordinator

COR. CONTROL	X	X
ADMN. RECORD	X	X
PATS/T130G		

Reviewed for Addressee  
Corres. Control RFP

9/23/97 SK  
Date By

Ref Ltr. #

DOE ORDER # 5400.1

Enclosure

cc w/Enc:  
T. Rehder, EPA  
D. Shelton, K-H  
B. Evans, K-H  
Administrative Record



Steve Tarlton  
97-DOE-05409

2

SEP 23 1997

cc w/o Enc:

J. Karpatkin, CED, RFFO

J. Legare, AMEC, RFFO

G. Hill, AMEC, RFFO

R. April, RLG, RFFO

R. Tyler, ER/WM, RFFO

F. Gerdeman, PCD, RFFO

W. Fitch, ER/WM, RFFO

S. Schiesswohl, CAMD, RFFO



September 16, 1997

97-RF-04932

W. N. Fitch  
Decommissioning Program Coordinator  
DOE, RFFO

**BUILDING T891 TRAILER COMPLEX RECONNAISSANCE LEVEL CHARACTERIZATION  
REPORT - KAD-087-97**

**PURPOSE**

The purpose of this letter is to provide your office with the Reconnaissance Level Characterization Report for the T891 Trailer Complex Decommissioning Project.

**DISCUSSION**

Please find attached for your use, the Building T891 Trailer Complex Draft Reconnaissance Characterization Level Report for your information. Comments received September 3, 1997, have been incorporated.

**RESPONSE REQUIREMENTS**

Contact my office at extension 6034, if there are any comments or concerns regarding this document for the T891 Trailer Complex decommissioning project.

K. A. Dorr  
Project Oversight

.alw

Orig. and 1 cc - W. N. Fitch

Attachment:  
As Stated

cc:

J. A. Legare  
R. W. Tyler

5  
Kaiser-Hill Company, L.L.C.

Courier Address: Rocky Flats Environmental Technology Site, State Hwy. 93 and Cactus, Rocky Flats, CO 80007 • 303.966.7000

Mailing Address: P.O. Box 464, Golden, Colorado 80402-0464



Rocky Mountain  
Remediation Services, L.L.C.  
... protecting the environment

RF/RMRS-97-056

INFORMATION ONLY

INFORMATION ONLY

# Reconnaissance Level Characterization Report For The T891 Cluster Trailer Removal Project

Rocky Mountain Remediation Services, L.L.C.

September 1997

INFORMATION ONLY

INFORMATION ONLY

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## RECONNAISSANCE LEVEL CHARACTERIZATION REPORT

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## ACRONYMS

DOE	U. S. Department of Energy
DQO	Data Quality Objective
EPA	U. S. Environmental Protection Agency
IWCP	Integrated Work Control Program
OSHA	Occupational Safety and Health Administration
RFETS	Rocky Flats Environmental Technology Site
RFFO	Rocky Flats Field Office

## RECONNAISSANCE LEVEL CHARACTERIZATION REPORT

### 1.0 INTRODUCTION

The Department of Energy (DOE) has established a goal of reducing the total built square footage at the Rocky Flats Environmental Technology Site (RFETS) by 2% in FY97. RFETS management has determined that the T891 Trailer Cluster, and Trailer 900E will be removed to help meet the 2% goal. This project will help RFETS management reduce operating costs and hazards.

The T891 Trailer Cluster is comprised of prefabricated trailers (A,L,M and N) located in the south east portion of RFETS (Figure 1-1). Trailers T891A, L, M, and N are portable office trailers measuring twelve (12) feet wide by sixty (60) feet in length. The trailers are constructed of materials similar to those used in mobile homes. All trailers are powered by the site's electrical power distribution system. Trailers T891A and T891 M have domestic water and sewer connections. No Individual Hazardous Substance Site, Areas of Concern, or Under Building Contamination have been identified with respect to the removal of the T891 Cluster facilities.

Trailer T891 A was brought to the site in 1990 as a field office for the construction of the 881 Hillside Interim Measure/Interim Remedial Action Project. This trailer has been used for office space and recently housed Radiological Engineering personnel. While some radioactive materials have been present in the trailer, no hazardous wastes or materials were ever handled or used at this facility.

Trailers T891L and T891 M have been used by the site's Surface Water Program and the previous Environmental Restoration Soil Sciences Program. These trailers have primarily been used to support field sampling activities and have also been used as field laboratories. T891N has been used to house construction project personnel, and to a lesser extent, to support field sampling activities by site subcontractors.

Trailer T900E is a semi-trailer that contains soil vapor extraction treatment equipment. This trailer, called the Soil Vapor Extraction Unit, was used to treat soils affected by volatile organic compounds emitted from Trench 3 at Operable Unit Number Two. Trailer T900E measures eight (8) feet in width and forty (40) feet in length.

Plan views of all the trailers in the T891 Trailer Cluster been included with the radiological survey data in Attachment 7.1.

### 1.1 PURPOSE

The purpose of this Reconnaissance Level Characterization Report is to present all of the available data and process information related to operations at the T891 Trailer Cluster, in an effort to characterize the subject facilities. Characterization includes identification of the type, quantity, condition, and location of both confirmed and potential sources of radioactive and hazardous materials within the Cluster, which was required as part of the *Reconnaissance Level Characterization Plan* (RMRS, 1997). The following facility information incorporates the T891 Trailer Cluster removal project files established during the reconnaissance characterization, including pertinent data from various sources. This report is to serve as a practical reference during removal operations.

This report will provide a baseline of information of the hazards within the T891 Cluster. The baseline will aid the DOE/Rocky Flats Field Office (RFFO) in determining the need for a Decommissioning Operations Plan as part of the decommissioning effort.

## 1.2 SCOPE

This report is prepared in support of the T891 Cluster characterization and removal for DOE at the RFETS located near Golden, Colorado. Figure 1-1 shows the location of the T891 Cluster facilities. The plan views and radiological survey data of each room are located in Attachment 7.1. The information presented in this report specifically defines the removal phase of the T891 Cluster.

The information presented in this report is specific to the T891 Cluster. The report contains information obtained during historical document reviews, personnel interviews and characterization information generated in support of this document.

## 1.3 METHODOLOGY

As part of this investigation, comprehensive physical inspections of all accessible areas of the T891 Cluster were conducted during July and August of 1997. The primary purpose of these inspections were:

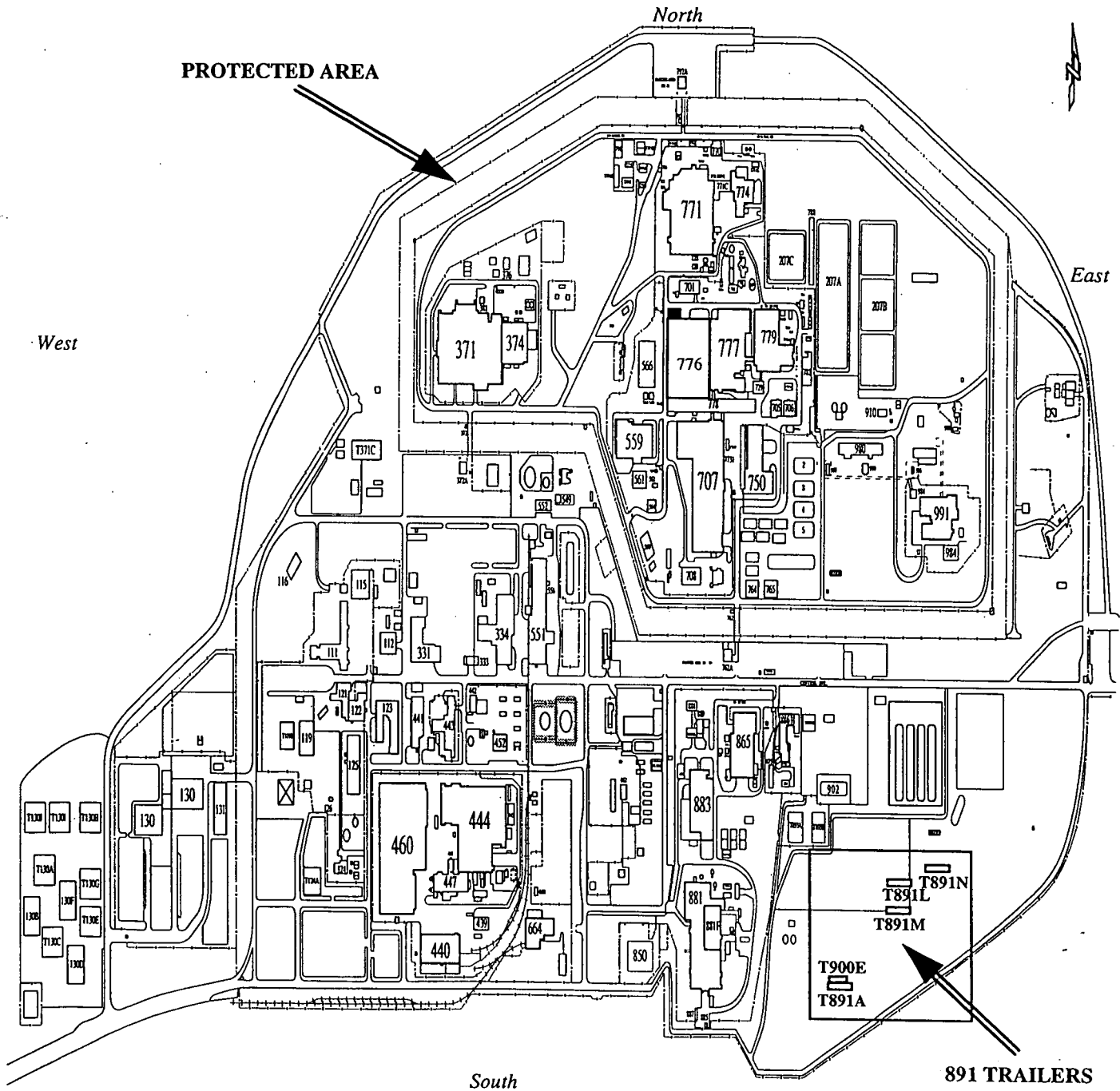
- to confirm the accuracy of file documentation of as-built or modified facility construction equipment installations and general facility conditions,
- obtain volume estimates for wastes that will be generated during removal activities,
- identify equipment, structures, process lines, and associated items that will require hazardous and/or radioactive surveys and analytical sampling to further characterize the Cluster,
- identify potential sources of lead and asbestos,
- identify potential chemical contamination, (chemical contamination would be identified by signs of staining or unusual smell),
- identify physical hazards (such as tripping hazards, loose/missing handrails, etc.).

## 1.4 SUMMARY

After the project walkdown (see Section 1.3) the Data Quality Objective (DQO) process was used to determine the need to identify the type of contaminants to be sampled. The results of the DQO process is documented in the Sampling and Analysis and the Reconnaissance Level Characterization Plan for the T891 Cluster. As a part of the reconnaissance examination, a comprehensive survey of historical records was undertaken to determine the location and character of any radioactive and hazardous contaminants present in the area. A trailer by trailer compilation of relevant process knowledge and characterization information is presented in Section 3.0. The following is a summary of characterization information:

- No physical hazards were identified which would endanger the trailer occupants or construction workers.
- Some chemicals were identified as being stored in the trailers. Most of the stored chemicals were cleaning solutions. No chemical residues or chemical smell was identified in the trailers.

FIGURE 1-1 SITE MAP



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- Asbestos containing material is identified in Appendix B of Attachment 7.2. A total of 25 samples were taken. Only three (3) samples tested positive for asbestos (3-5%) from tile samples in T891A.
- Paint was found to contain lead, zinc and chromium (see Attachment 7.2). A total of 13 paint samples were taken to assess arsenic, chromium, lead and zinc content. The ranges for these constituents for all paint samples taken were as follows:

As: 0-2510 ppm  
Cr: 0-2790 ppm  
Pb: 0-420 ppm  
Zn: 0-1510 ppm

- No radioactive contamination was identified in any of the trailers during the scoping surveys. Additional surveys will be performed prior to final release. (See Table 3.3)

## 2.0 ANALYTICAL TESTING

Specific rationale for sampling and analysis was presented in the *Asbestos and Lead Sampling and Analysis Plan for the T891 Trailers* (RMRS, 1997, Attachment 7.3).

### 2.1 WASTE MANAGEMENT

Materials from removal activities, including, masonry units, and lumber, will be generated as waste and characterized prior to disposition. Procedures are in place to insure that sampling and analysis of generated wastes will be in accordance with the U. S. Environmental Protection Agency (EPA) and State regulations. Hazardous and radioactive contaminant data is acquired, to a level consistent with regulatory and procedural requirements, for wastes that will be generated. The requirements for characterization of hazardous waste is specified in several RFETS waste management procedures, based on requirements established primarily by 40 CFR 261 and 6 CCR 1007-3, 261. Waste materials demonstrating hazardous or radioactive characteristics are managed in accordance with the Low-Level or Hazardous Waste Requirements Manual.

### 2.2 INDUSTRIAL HYGIENE

The potential for exposure to hazardous or radioactive substances will be evaluated, prior to conducting the operation, according to Occupational Safety and Health Act (OSHA) and National Institute of Occupational Safety and Health (NIOSH) requirements. A Demolition Plan will be written by the subcontractor. This requirement is driven by OSHA 1926.62 for lead and driven by other sections of OSHA for other constituents. Data will be acquired for contaminants associated with equipment, building materials, residuals within construction areas, or other potential sources of hazardous exposure to the workers. Preliminary screening and sampling is required in decommissioning areas for materials which the workers may be exposed. Trailers designated for offsite transport will be surveyed for radiological contamination. The documentation will be included in the project files for IWCP closeout. Instructions for completing reconnaissance level radiological surveys and results have been included as Attachment 7.1. Trailers will be decommissioned according to Engineering and Administrative Controls, Decontamination, or use of Personal Protective Equipment, as implemented under appropriate plans and procedures to meet OSHA requirements.

### 3.0 RECONNAISSANCE SURVEY RESULTS

#### 3.1 ASBESTOS

In March 1997, the RMRS IH&S Team members inspected the T891 Cluster for asbestos as a part of the site-wide assessment. As part of this reconnaissance level survey, Trailers T891A, T891L, T891M, T891N, and T900E were inspected for asbestos and lead during the week of July 14-18, 1997. T900E was determined to be "exempt" from asbestos and lead sampling (Attachment 7.1). The survey results are included in Attachment 7.2, which summarizes all asbestos information by two separate inspections/evaluations a total of 25 asbestos samples were taken with positive results noted for T891A floor tiles (3%-5% ACM). Attachment 7.2, Appendix B, *Asbestos Bulk Sample Data Table* contains additional asbestos sampling results obtained to complete asbestos characterization of the overall cluster. All work was conducted in accordance with the Asbestos Hazard Emergency Response Act (AHERA).

#### 3.2 LEAD

A total of 13 bulk paint samples were collected in July 1997 from T891A, T891L, T891M and T891 N for lead analysis utilizing Atomic Absorption Spectroscopy (EPA method SW846-3050A/7420). Analysis results indicate that the samples collected from ceiling, door, siding, skirting, wall, and stair surfaces contained low concentrations of lead (0-420 ppm). Other constituents detected, include arsenic (0-2510 ppm), chromium (0-2790 ppm) and zinc (0-1510). T891N has vinyl skirting, which rested negative for lead, chromium, and zinc. Bulk lead sample analyses results are included in Attachment 7.2, Appendix B.

#### 3.3 RADIOLOGICAL SURVEYS

Specific instructions for Radiological Surveys for the trailers are provided with the results of these surveys as Attachment 7.2. Results from all surveys were below detection limits. Survey data is summarized in Table 3.3. The Radiological survey results in Table 3.3 were compared to the "unrestricted release limits" in Table 3.4 and found to be below the listed values. A reading of removable alpha of <18 is less than the removable limit of 20 dpm/100 cm<sup>2</sup> listed, <205 for beta/gamma is less than 1000 dpm/100 cm<sup>2</sup>, <60 for total alpha is less than 100 for fixed + removable dpm/100 cm<sup>2</sup> and <455 total beta/gamma is less than 5000 dpm/100 cm<sup>2</sup> (Table 3.4).

### 4.0 DATA QUALITY ASSESSMENT

All sampling data were reviewed and considered valid and thereby usable, according to sampling, analytical, and record keeping procedures. DQOs for the characterization have been satisfied, in accordance with the requirements outlined in the *Asbestos and Lead Sampling and Analysis Plan for the T891 Trailers* (RMRS, 1997).

### 5.0 DECISIONS MADE

Minimal wastes will be generated as a result of the removal of the T891 Trailer Cluster. Wastes to be generated by the project have been characterized as sanitary. The subcontractor will be responsible for the removal of all skirting material from the facility and determine if the material can be reused. Scrap metal removed from the Trailer Cluster (i.e., excavated conduit) will be recycled to the greatest extent possible.

## 6.0 REFERENCES

DOE 1992, *Historical Release Report*.

RMRS 1997, *Asbestos and Lead Sampling and Analysis Plan for the T891 Trailers*, July.

RMRS 1997, *Project Execution Plan for the Removal of Trailers T891A, T891L, T891M, T891N and T900E*, Rev. 1, May.

RECONNAISSANCE LEVEL CHARACTERIZATION  
REPORT FOR THE T891 CLUSTER  
TRAILER REMOVAL PROJECT

RF/RMRS-97-056  
Rev. 1, Page 7 of 9  
Date Effective: 09/09/97

TABLE 3.3 RADIOLOGICAL SURVEY DATA

Item	# of Alpha/Beta Swipes	# of Direct Alpha/Beta Measurements	REMOVABLE Alpha dpm/100 cm <sup>2</sup>	REMOVABLE Beta dpm/100 cm <sup>2</sup>	TOTAL Alpha dpm/100 cm <sup>2</sup>	TOTAL Beta/Gamma dpm/100 cm <sup>2</sup>	Below Unrestricted Limits Release
T891A	10 biased on floor. 1 per component.  2 exterior.	10 biased on floor. 1 per component.  2 exterior.	<18	<205	<60	<455	yes
T891L	10 biased on floor. 1 per component.  2 exterior.	10 biased on floor. 1 per component.  2 exterior.	<18	<205	<60	<455	yes
T891M	10 biased on floor. 1 per component.  2 exterior.	10 biased on floor. 1 per component.  2 exterior.	<18	<205	<60	<455	yes
T891N	10 biased on floor. 1 per component.  2 exterior.	10 biased on floor. 1 per component.  2 exterior.	<18	<205	<60	<455	yes
T900E	20 biased on floor. 5 for HEPA system. 1 per component.	20 biased on floor. 5 for HEPA system. 1 per component.	<18	<205	<60	<455	yes

Radiological survey data forms are available on request.

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**TABLE 3.4 SUMMARY OF CONTAMINATION VALUES FOR UNRESTRICTED RELEASE**

<b>RADIONUCLIDE (1)</b>	<b>Average Total (Fixed + Removable) Contamination dpm/100cm<sup>2</sup> (2), (3), (4)</b>	<b>Maximum Total (Fixed + Removable) dpm/100cm<sup>2</sup> (2),(4), (5)</b>	<b>Removable dpm/100cm<sup>2</sup> (2), (4), (6)</b>
Transuranics, Ra-226, Ra-228, Th-228, Pa-231, Ac-227, I-125, I-129	100	300	20
Th-Natural, Th-232, Sr-90, Ra-223, Ra-224, U-232, I-131, I-133	1,000	3,000	200
U-Natural, U-235, U-238, and associated decay products, alpha emitters	5,000	15,000	1,000
Beta-gamma emitters (radionuclides with decay modes other than alpha emission or spontaneous fission) except Sr-90 and others noted above (7)	5,000	15,000	1,000

**NOTES:**

- (1) Where surface contamination by both alpha and beta-gamma emitting radionuclides exists, the limits established for alpha and beta-gamma emitting radionuclides should apply independently.
- (2) As used in this table, disintegrations per minute (dpm) is defined as the rate of emission by radioactive material as determined by correcting the counts per minute measured by an appropriate detector for background, efficiency, and geometric factors associated with the instrumentation.
- (3) Measurements of average contamination should not be averaged over an area of more than 1 meter<sup>2</sup>. For objects with a total surface area of less than 1 meter<sup>2</sup>, the average should be derived for each object.
- (4) The average and maximum dose rates associated with surface contamination resulting from beta-gamma emitters should not exceed 0.2 mRad/hour and 1.0 mRad/hour, respectively at 1 cm.
- (5) The maximum contamination level applies to an area of not more than 100 cm<sup>2</sup>.
- (6) The amount of removable material per 100 cm<sup>2</sup> of surface area should be determined by wiping an area of that size with a dry filter of soft absorbent paper, applying moderate pressure, and measuring the amount of radioactive material on the wipe with an appropriate instrument of known efficiency. When removable contamination on objects of surface area less than 100 cm<sup>2</sup> is determined, the activity per unit area should be based on the actual area and the entire surface should be wiped. Except for transuranics and Ra-228, Ac-227, Th-228, Th-230, Pa-231, and alpha emitters, it is not necessary to use swiping techniques to measure removable contamination levels if direct scan surveys indicate the total residual surface contamination levels are within the limits for removable contamination.
- (7) This category of radionuclides includes mixed fission products, including the Sr-90 which is present in them. It does not apply to Sr-90 which has been separated from the other fission products or mixtures where the Sr-90 has been enriched.

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## 7.0 ATTACHMENTS

- 7.1 Building T891 Trailer Cluster Decommissioning Project Characterization Radiological Instructions and Results
- 7.2 Asbestos and Lead Characterization Report for the T891 Trailer Cluster Including: T891A, T891L, T891 M, T891N and T900E, August 1997
- 7.3 Asbestos and Lead Sampling and Analysis Plan for the T891 Trailers, July 1997
- 7.4 Reconnaissance Level Characterization Plan for the T891 Cluster Trailer Removal Project.

**ATTACHMENT 7.1**

**Building T891 Trailer Cluster Decommissioning Project  
Characterization Radiological Instructions and Results**

# **Trailer 891A Removal Project** **Characterization Survey Radiological Instructions**

Location/Room: T891A

Item/Area Description <sup>1</sup>	# of Alpha/Beta Swipes <sup>2</sup>	# of Direct Alpha/Beta Measurements <sup>2</sup>	Scan Survey <sup>3</sup>	Special Instructions
Floor	10	10	N/A	Obtain measurements on floor surface throughout the trailer
Sink Drain	A minimum of one measurement inside each sink	A minimum of one measurement inside each sink	N/A	Obtain measurements on accessible surfaces of sinks
Desk, File Cabinets, etc.	A minimum of one measurement per component	A minimum of one measurement per component	N/A	Obtain measurements on accessible surfaces of components
Trailer Exterior	2 per side and roof	2 per side and roof	N/A	Obtain measurements on exterior surfaces

## **Notes**

<sup>1</sup> See attached trailer layout

<sup>2</sup> Surveys to be performed in accordance with 4-K62-ROI-03.01, "Performance of Surface Contamination Surveys". Other radiological references: 1-P73-HSP-18.10, "Radioactive Material Transfer and Unrestricted Release of Property and Waste", 4-S23-ROI-03.02, "Radiological Requirements for Unrestricted Release", and 4-N83-REP-1108, "Radioactive Material Management Area (RMMA) Determination".

<sup>3</sup> Perform an alpha/beta scan survey of the percentage of accessible surfaces, including fixed equipment, as listed.

Prepared By: \_\_\_\_\_

Date: \_\_\_\_\_

Reviewed By: \_\_\_\_\_

Date: \_\_\_\_\_

# RADIOLOGICAL CONTAMINATION SURVEY FORM

PAGE 1 OF 4

LOG NUMBER:	
FOR: _____ P/WRE _____ PRL _____ RWP <input checked="" type="checkbox"/> OTHER _____	
BUILDING/LOCATION: <u>Trailer 891A</u>	ROOM: <u>See Map</u>
DATE: <u>8-12-97</u>	TIME: <u>0900</u>
ITEM DESCRIPTION: <u>Field Office T-891A to be shipped offsite</u>	
COMMENTS: <u>Surveyed in accordance with attached instruction &amp; drawing</u>	
PERFORMED BY (PRINT NAME): <u>Murphy</u>	
<u>[Signature]</u> RCT SIGNATURE	<u>[Redacted]</u> EMP# <u>18-11-97</u> DATE

*Copy*

## REMOVABLE CONTAMINATION SURVEY INSTRUMENT DATA

MFR:	EBER.	EBER.	EBER.	EBER.
MODEL:	S.A.C. - 4	S.A.C. - 4	S.A.C. - 4	S.A.C. - 4
SERIAL #:	<u>824</u>	<u>1050</u>		
CAL DATE:	<u>3-97</u>	<u>3-97</u>		
CAL DUE DATE:	<u>9-97</u>	<u>9-97</u>		

MFR:	EBER.	EBER.	EBER.	EBER.
MODEL:	B.C. 4	B.C. 4	B.C. 4	B.C. 4
SERIAL #:	<u>838</u>	<u>770</u>		
CAL DATE:	<u>6-97</u>	<u>7-97</u>		
CAL DUE DATE:	<u>12-97</u>	<u>1-98</u>		

## TOTAL CONTAMINATION SURVEY INSTRUMENT DATA

MFR:	N.E. TECH			
MODEL:	ELECTRA			
SERIAL #:	<u>1265</u>			
CAL DATE:	<u>4-97</u>			
CAL DUE DATE:	<u>10-97</u>			
BACKGROUND:	<u>2.0</u>			
EFFICIENCY:	<u>22.8</u>			
MDA:	<u>4.55</u>			

REVIEWED BY:

[Signature]  
RO SUPERVISION PRINT NAME

[Signature] 8 B91  
RO SUPERVISION SIGNATURE DATE

$$MDA = CF \times [2.71 + 4.65 \sqrt{\text{BACKGROUND (CPM)}}]$$

21

# RADIOLOGICAL CONTAMINATION SURVEY FORM

LOG / SURVEY NUMBER \_\_\_\_\_

PAGE 3 OF 4

SURVEY RESULTS (DPM/100 CM SQ)

SURVEY RESULTS (DPM/100 CM SQ)

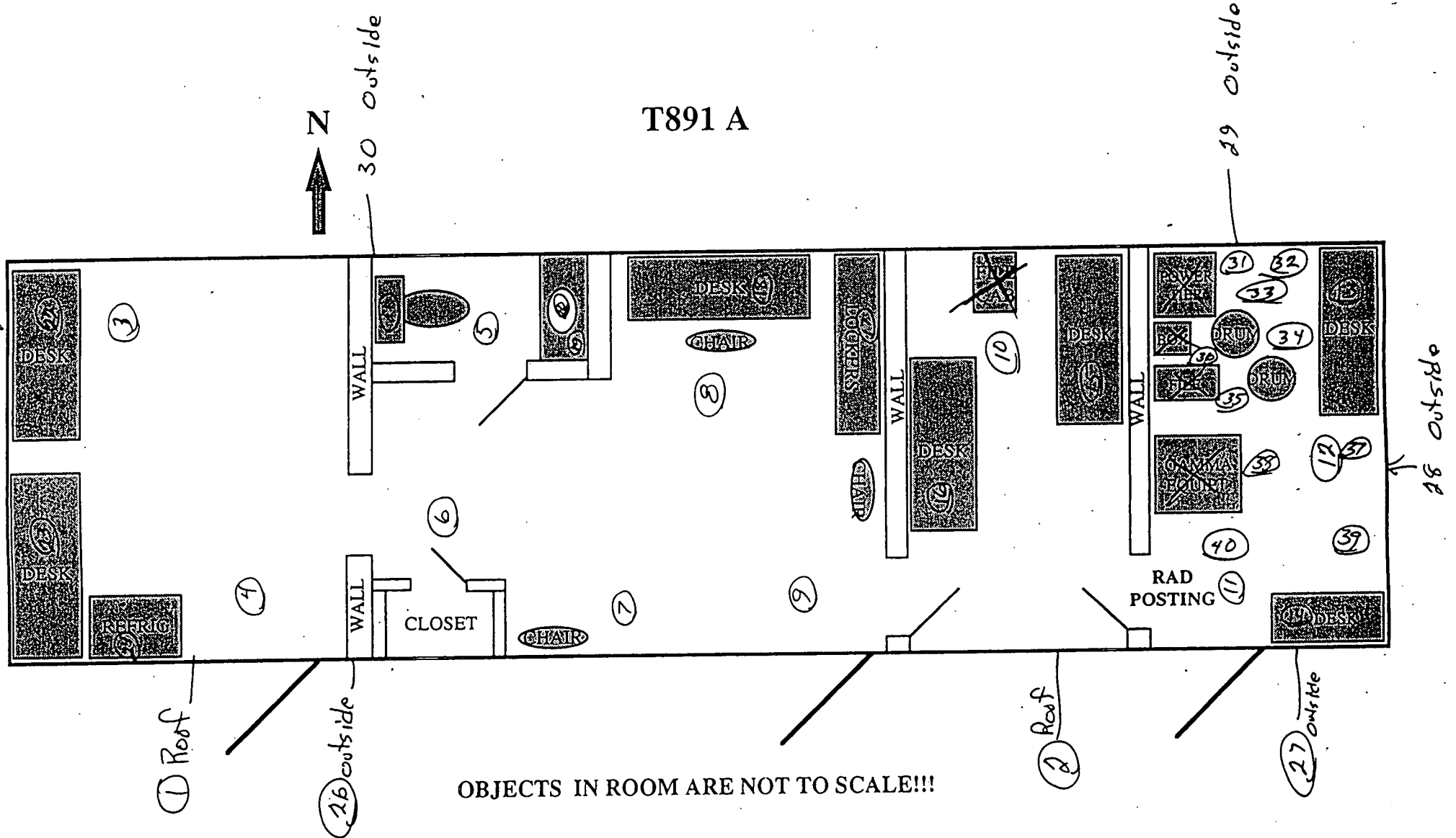
SWIP #S	LOCATION/DESCRIPTION	REMOVABLE		TOTAL ALPHA (FRISK / 60 SEC COUNT)	TOTAL BETA/ GAMMA
		ALPHA	BETA/ GAMMA		
22	See Drawing	<18	<205	<60	<455
23		<18	<205	<60	<455
24		<18	<205	<60	<455
25		<18	<205	<60	<455
26		<18	<205	<60	<455
27		<18	<205	<60	<455
28		<18	<205	<60	<455
29		<18	<205	<60	<455
30		<18	<205	<60	<455
31		<18	<205	<60	<455
32		<18	<205	<60	<455
33		<18	<205	<60	<455
34		<18	<205	<60	<455
35		<18	<205	<60	<455
36		<18	<205	<60	<455
37		<18	<205	<60	<455
38		<18	<205	<60	<455
39		<18	<205	<60	<455
40		<18	<205	<60	<455
41					
42					

SWIP #S	LOCATION/DESCRIPTION	REMOVABLE		TOTAL ALPHA (FRISK / 60 SEC COUNT)	TOTAL BETA/ GAMMA
		ALPHA	BETA/ GAMMA		
43					
44					
45					
46					
47					
48					
49					
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52					
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54					
55					
56					
57					
58					
59					
60					
61					
62					
63					

9-11-67

22

T891 A



**OBJECTS IN ROOM ARE NOT TO SCALE!!!**

23

# **Trailer 891L Removal Project** **Characterization Survey Radiological Instructions**

**Location/Room: T891L**

Item/Area Description <sup>1</sup>	# of Alpha/Beta Swipes <sup>2</sup>	# of Direct Alpha/Beta Measurements <sup>2</sup>	Scan Survey <sup>3</sup>	Special Instructions
Floor	10	10	N/A	Obtain measurements on floor surface throughout the trailer
Sink Drain	A minimum of one measurement inside each sink	A minimum of one measurement inside each sink	N/A	Obtain measurements on accessible surfaces of sinks
Desk, File Cabinets, etc.	A minimum of one measurement per component	A minimum of one measurement per component	N/A	Obtain measurements on accessible surfaces of components
Trailer Exterior	2 per side and roof	2 per side and roof	N/A	Obtain measurements on exterior surfaces

## **Notes**

<sup>1</sup> See attached trailer layout

<sup>2</sup> Surveys to be performed in accordance with 4-K62-ROI-03.01, "Performance of Surface Contamination Surveys". Other radiological references: 1-P73-HSP-18.10, "Radioactive Material Transfer and Unrestricted Release of Property and Waste", 4-S23-ROI-03.02, "Radiological Requirements for Unrestricted Release", and 4-N83-REP-1108, "Radioactive Material Management Area (RMMA) Determination".

<sup>3</sup> Perform an alpha/beta scan survey of the percentage of accessible surfaces, including fixed equipment, as listed.

Prepared By: 

Date: 8/4/97

Reviewed By: 

Date: 08/04/97



# RADIOLOGICAL CONTAMINATION SURVEY FORM

PAGE 1 OF 2

REMOVABLE CONTAMINATION  
SURVEY INSTRUMENT DATA

MFR:	EBER.	S.A.C. 4	824	3-10-97	9-10-97	EBER.	S.A.C. 4	1050	3-11-97	9-11-97	EBER.	S.A.C. 4	EBER.
MODEL:	S.A.C. 4	824	3-10-97	9-10-97	9-10-97	EBER.	S.A.C. 4	1050	3-11-97	9-11-97	EBER.	S.A.C. 4	EBER.
SERIAL #:	S.A.C. 4	824	3-10-97	9-10-97	9-10-97	EBER.	S.A.C. 4	1050	3-11-97	9-11-97	EBER.	S.A.C. 4	EBER.
CAL DATE:	S.A.C. 4	824	3-10-97	9-10-97	9-10-97	EBER.	S.A.C. 4	1050	3-11-97	9-11-97	EBER.	S.A.C. 4	EBER.
CAL DUE DATE:	S.A.C. 4	824	3-10-97	9-10-97	9-10-97	EBER.	S.A.C. 4	1050	3-11-97	9-11-97	EBER.	S.A.C. 4	EBER.
MFR:	EBER.	S.A.C. 4	824	3-10-97	9-10-97	EBER.	S.A.C. 4	1050	3-11-97	9-11-97	EBER.	S.A.C. 4	EBER.
MODEL:	S.A.C. 4	824	3-10-97	9-10-97	9-10-97	EBER.	S.A.C. 4	1050	3-11-97	9-11-97	EBER.	S.A.C. 4	EBER.
SERIAL #:	S.A.C. 4	824	3-10-97	9-10-97	9-10-97	EBER.	S.A.C. 4	1050	3-11-97	9-11-97	EBER.	S.A.C. 4	EBER.
CAL DATE:	S.A.C. 4	824	3-10-97	9-10-97	9-10-97	EBER.	S.A.C. 4	1050	3-11-97	9-11-97	EBER.	S.A.C. 4	EBER.
CAL DUE DATE:	S.A.C. 4	824	3-10-97	9-10-97	9-10-97	EBER.	S.A.C. 4	1050	3-11-97	9-11-97	EBER.	S.A.C. 4	EBER.

TOTAL CONTAMINATION  
SURVEY INSTRUMENT DATA

MFR:	N.E. TECH	1265	4-28-97	10-28-97	10-28-97	EBER.	N.E. TECH	1265	4-28-97	10-28-97	EBER.	N.E. TECH	EBER.
MODEL:	N.E. TECH	1265	4-28-97	10-28-97	10-28-97	EBER.	N.E. TECH	1265	4-28-97	10-28-97	EBER.	N.E. TECH	EBER.
SERIAL #:	N.E. TECH	1265	4-28-97	10-28-97	10-28-97	EBER.	N.E. TECH	1265	4-28-97	10-28-97	EBER.	N.E. TECH	EBER.
CAL DATE:	N.E. TECH	1265	4-28-97	10-28-97	10-28-97	EBER.	N.E. TECH	1265	4-28-97	10-28-97	EBER.	N.E. TECH	EBER.
CAL DUE DATE:	N.E. TECH	1265	4-28-97	10-28-97	10-28-97	EBER.	N.E. TECH	1265	4-28-97	10-28-97	EBER.	N.E. TECH	EBER.
MFR:	N.E. TECH	1265	4-28-97	10-28-97	10-28-97	EBER.	N.E. TECH	1265	4-28-97	10-28-97	EBER.	N.E. TECH	EBER.
MODEL:	N.E. TECH	1265	4-28-97	10-28-97	10-28-97	EBER.	N.E. TECH	1265	4-28-97	10-28-97	EBER.	N.E. TECH	EBER.
SERIAL #:	N.E. TECH	1265	4-28-97	10-28-97	10-28-97	EBER.	N.E. TECH	1265	4-28-97	10-28-97	EBER.	N.E. TECH	EBER.
CAL DATE:	N.E. TECH	1265	4-28-97	10-28-97	10-28-97	EBER.	N.E. TECH	1265	4-28-97	10-28-97	EBER.	N.E. TECH	EBER.
CAL DUE DATE:	N.E. TECH	1265	4-28-97	10-28-97	10-28-97	EBER.	N.E. TECH	1265	4-28-97	10-28-97	EBER.	N.E. TECH	EBER.

MIDA = CF X (2.71 + 4.65) / BACKGROUND (CPM)

LOG NUMBER:	
FOR: <input type="checkbox"/> PWRE <input checked="" type="checkbox"/> PRL <input type="checkbox"/> OTHER	
BUILDING/LOCATION: T-891 L	ROOM: See Map
DATE: 8-13-97	TIME: 0900
ITEM DESCRIPTION: Field office, T-891 L to be shipped off site	
COMMENTS: Surveyed in accordance with instruction sheet & map	
PERFORMED BY (PRINT NAME): [Redacted]	
RGT SIGNATURE: [Redacted]	
EMP# [Redacted]	
DATE: 8-13-97	

REVIEWED BY: Teresa Johnston

RO SUPERVISION PRINT NAME

RO SUPERVISION SIGNATURE

DATE: 8-14-97

25

# RADIOLOGICAL CONTAMINATION SURVEY FORM

LOG / SURVEY NUMBER

PAGE 2 OF 3

DRAWING

SURVEY RESULTS (DPM/100 CM SQ)

See attached  
Map

SWTP #S	LOCATION/DESCRIPTION	REMOVABLE		TOTAL ALPHA (FRISK / 60 SEC COUNT)	TOTAL BET/ GAMMA
		ALPHA	BETA/ GAMMA		
1		<18	<205	<60	<45
2		<18	<205	<60	<45
3		<18	<205	<60	<45
4		<18	<205	<60	<45
5		<18	<205	<60	<45
6		<18	<205	<60	<45
7		<18	<205	<60	<45
8		<18	<205	<60	<45
9		<18	<205	<60	<45
10		<18	<205	<60	<45
11		<18	<205	<60	<45
12		<18	<205	<60	<45
13		<18	<205	<60	<45
14		<18	<205	<60	<45
15		<18	<205	<60	<45
16		<18	<205	<60	<45
17		<18	<205	<60	<45
18		<18	<205	<60	<45
19		<18	<205	<60	<45
20		<18	<205	<60	<45
21		<18	<205	<60	<45

26

# RADIOLOGICAL CONTAMINATION SURVEY FORM

LOG / SURVEY NUMBER \_\_\_\_\_

PAGE 3 OF 3

SURVEY RESULTS (DPM/100 CM SQ)

SWTP #S	LOCATION/DESCRIPTION	REMOVABLE		TOTAL ALPHA	TOTAL BETA/
		ALPHA	BETA/ GAMMA	(FRISK / 60 SEC COUNT)	GAMMA
22		<18	<205	<60	<455
23		<18	<205	<60	<455
24		<18	<205	<60	<455
25		<18	<205	<60	<455
26		<18	<205	<60	<455
27		<18	<205	<60	<455
28		<18	<205	<60	<455
29		<18	<205	<60	<455
30		<18	<205	<60	<455
31					
32					
33					
34					
35					
36					
37					
38					
39					
40					
41					
42					

SURVEY RESULTS (DPM/100 CM SQ)

SWTP #S	LOCATION/DESCRIPTION	REMOVABLE		TOTAL ALPHA	TOTAL BETA/
		ALPHA	BETA/ GAMMA	(FRISK / 60 SEC COUNT)	GAMMA
43					
44					
45					
46					
47					
48					
49					
50					
51					
52					
53					
54					
55					
56					
57					
58					
59					
60					
61					
62					
63					

27

Z 

A hand-drawn floor plan of a room with numbered items 1 through 29. The plan includes desks, a TV, a wall, a closet, a scrap furniture box, a file cabinet, a chair, and a trash can. Arrows point to items 1 and 2.

- 1: Oval object, top left.
- 2: Oval object, top left.
- 3: Oval object, top left.
- 4: Oval object, top left.
- 5: Oval object, top left.
- 6: Oval object, top left.
- 7: Oval object, top left.
- 8: Oval object, top left.
- 9: Oval object, top left.
- 10: Oval object, top left.
- 11: Oval object, top left.
- 12: Oval object, top left.
- 13: Oval object, top left.
- 14: Oval object, top left.
- 15: Oval object, top left.
- 16: Oval object, top left.
- 17: Oval object, top left.
- 18: Oval object, top left.
- 19: Oval object, top left.
- 20: Oval object, top left.
- 21: Oval object, top left.
- 22: Oval object, top left.
- 23: Oval object, top left.
- 24: Oval object, top left.
- 25: Oval object, top left.
- 26: Oval object, top left.
- 27: Oval object, top left.
- 28: Oval object, top left.
- 29: Oval object, top left.

②⑨ { ③⑩ located on roof exterior

~~East 24 13~~  
~~West 13 45~~

8318

Trailer 891M Removal Project  
Characterization Survey Radiological Instructions

Location/Room: T891M

Item/Area Description <sup>1</sup>	# of Alpha/Beta Swipes <sup>2</sup>	# of Direct Alpha/Beta Measurements <sup>2</sup>	Scan Survey <sup>3</sup>	Special Instructions
Floor	10	10	N/A	Obtain measurements on floor surface throughout the trailer with bias in lab area
Sink Drain	A minimum of one measurement inside each sink	A minimum of one measurement inside each sink	N/A	Obtain measurements on accessible surfaces of sinks
Desk, File Cabinets, etc.	A minimum of one measurement per component	A minimum of one measurement per component	N/A	Obtain measurements on accessible surfaces of components
Trailer Exterior	2 per side and roof	2 per side and roof	N/A	Obtain measurements on exterior surfaces

Notes

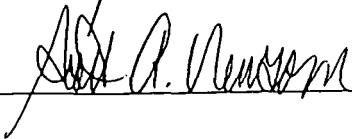
<sup>1</sup> See attached trailer layout

<sup>2</sup> Surveys to be performed in accordance with 4-K62-ROI-03.01, "Performance of Surface Contamination Surveys". Other radiological references: 1-P73-HSP-18.10, "Radioactive Material Transfer and Unrestricted Release of Property and Waste", 4-S23-ROI-03.02, "Radiological Requirements for Unrestricted Release", and 4-N83-REP-1108, "Radioactive Material Management Area (RMMA) Determination".

<sup>3</sup> Perform an alpha/beta scan survey of the percentage of accessible surfaces, including fixed equipment, as listed.

Prepared By: 

Date: 8/4/97

Reviewed By: 

Date: 08/04/97

# RADIOLOGICAL CONTAMINATION SURVEY FORM

PAGE 1 OF 3

3  
2  
8/18

LOG NUMBER: _____	
FOR: _____ P/WRE _____ PRL _____ _____ RWP <input checked="" type="checkbox"/> OTHER _____	
BUILDING/LOCATION: <u>T-891 M</u>	ROOM: <u>See Map</u>
DATE: <u>8-13-97</u>	TIME: <u>1230</u>
ITEM DESCRIPTION: <u>Field office T-891 M</u> <u>to be shipped offsite</u>	
COMMENTS: <u>Surveyed in accordance with</u> <u>attached instructions &amp; drawing</u>	
PERFORMED BY (PRINT NAME): <u>Munoz</u> <u>[Signature]</u> / <u>8-13-97</u> RCT SIGNATURE EMP# DATE	

## REMOVABLE CONTAMINATION SURVEY INSTRUMENT DATA

MFR:	EBER.	EBER.	EBER.	EBER.
MODEL:	S.A.C. - 4	S.A.C. - 4	S.A.C. - 4	S.A.C. - 4
SERIAL #:	824	1050		
CAL DATE:	3-10-97	3-11-97		
CAL DUE DATE:	9-10-97	9-11-97		
MFR:	EBER.	EBER.	EBER.	EBER.
MODEL:	B.C. 4	B.C. 4	B.C. 4	B.C. 4
SERIAL #:	81838	81770		
CAL DATE:	6-24-97	7-7-97		
CAL DUE DATE:	12-24-97	1-7-98		

## TOTAL CONTAMINATION SURVEY INSTRUMENT DATA

MFR:	N.E. TECH			
MODEL:	ELECTRA			
SERIAL #:	1265			
CAL DATE:	4-28-97			
CAL DUE DATE:	10-28-97			
BACKGROUND:	2.0			
EFFICIENCY:	33.1			
MDA:	455			

REVIEWED BY:

Teresa Johnston

RO SUPERVISION PRINT NAME

Teresa Johnston / 8-14-97  
RO SUPERVISION SIGNATURE DATE

$$MDA = CF \times (2.71 + 4.65 \sqrt{\text{BACKGROUND (CPM)}})$$

30

# RADIOLOGICAL CONTAMINATION SURVEY FORM

LOG / SURVEY NUMBER \_\_\_\_\_

PAGE 2 OF 3

T-891 m

DRAWING

SURVEY RESULTS (DPM/100 CM SQ)

SWIP #S	LOCATION/DESCRIPTION	REMOVABLE		TOTAL ALPHA (FRISK / M SEC COUNT)	TOTAL BET, GAMMA
		ALPHA	BETA/ GAMMA		
1		<18	<205	<60	<45
2		<18	<205	<60	<45
3		<18	<205	<60	<45
4		<18	<205	<60	<45
5		<18	<205	<60	<45
6		<18	<205	<60	<45
7		<18	<205	<60	<45
8		<18	<205	<60	<45
9		<18	<205	<60	<45
10		<18	<205	<60	<45
11		<18	<205	<60	<45
12		<18	<205	<60	<45
13		<18	<205	<60	<45
14		<18	<205	<60	<45
15		<18	<205	<60	<45
16		<18	<205	<60	<45
17		<18	<205	<60	<45
18		<18	<205	<60	<45
19		<18	<205	<60	<45
20		<18	<205	<60	<46
21		<18	<205	<60	<45

See attached  
map

3/

# RADIOLOGICAL CONTAMINATION SURVEY FORM

LOG / SURVEY NUMBER \_\_\_\_\_

PAGE 3 OF 3

T-896-M

SURVEY RESULTS (DPM/100 CM SQ)

SURVEY RESULTS (DPM/100 CM SQ)

SWTP #S	LOCATION/DESCRIPTION	REMOVABLE		TOTAL ALPHA (FRISK / 60 SEC COUNT)	TOTAL BETA/ GAMMA
		ALPHA	BETA/ GAMMA		
22		418	4205	460	4455
23		418	4205	460	4455
24		418	4205	460	4455
25		418	4205	460	4455
26		418	4205	460	4455
27		418	4205	460	4455
28		418	4205	460	4455
29		418	4205	460	4455
30		418	4205	460	4455
31					
32					
33					
34					
35					
36					
37					
38					
39					
40					
41					
42					

SWIP #S	LOCATION/DESCRIPTION	REMOVABLE		TOTAL ALPHA (FRISK / 60 SEC COUNT)	TOTAL BETA/ GAMMA
		ALPHA	BETA/ GAMMA		
43					
44					
45					
46					
47					
48					
49					
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61					
62					
63					

32



# RADIOLOGICAL CONTAMINATION SURVEY FORM

PAGE 1 OF 3

REMOVABLE CONTAMINATION  
SURVEY INSTRUMENT DATA

MFR:	EBER	S.A.C. 4	824	3-10-57	9-10-57	EBER	S.A.C. 4	1050	3-11-57	9-11-57	EBER	S.A.C. 4
MODEL:	EBER	S.A.C. 4	824	3-10-57	9-10-57	EBER	S.A.C. 4	1050	3-11-57	9-11-57	EBER	S.A.C. 4
SERIAL #:	824	3-10-57	9-10-57	3-11-57	9-11-57	824	3-10-57	9-10-57	3-11-57	9-11-57	824	3-10-57
CAL DATE:	3-10-57	9-10-57	3-11-57	9-11-57	3-11-57	9-11-57	3-10-57	9-10-57	3-11-57	9-11-57	3-11-57	9-11-57
CAL DUE DATE:	9-10-57	3-10-57	9-10-57	3-10-57	9-10-57	3-10-57	9-10-57	3-10-57	9-10-57	3-10-57	9-10-57	3-10-57
MFR:	EBER	B.C. 4	18838	6-24-57	7-24-57	EBER	B.C. 4	18838	6-24-57	7-24-57	EBER	B.C. 4
MODEL:	EBER	B.C. 4	18838	6-24-57	7-24-57	EBER	B.C. 4	18838	6-24-57	7-24-57	EBER	B.C. 4
SERIAL #:	18838	6-24-57	7-24-57	7-24-57	7-24-57	18838	6-24-57	7-24-57	7-24-57	7-24-57	18838	6-24-57
CAL DATE:	6-24-57	7-24-57	7-24-57	7-24-57	7-24-57	6-24-57	7-24-57	7-24-57	7-24-57	7-24-57	6-24-57	7-24-57
CAL DUE DATE:	12-24-57	1-7-58	1-7-58	1-7-58	1-7-58	12-24-57	1-7-58	1-7-58	1-7-58	1-7-58	12-24-57	1-7-58

TOTAL CONTAMINATION  
SURVEY INSTRUMENT DATA

MFR:	N.E. TECH	1245	4-28-57	10-28-57	2.0	4.0	2.0	4.0	2.0	4.0	2.0	4.0
MODEL:	ELECTRA	1245	4-28-57	10-28-57	2.0	4.0	2.0	4.0	2.0	4.0	2.0	4.0
SERIAL #:	1245	4-28-57	10-28-57	10-28-57	2.0	4.0	2.0	4.0	2.0	4.0	2.0	4.0
CAL DATE:	4-28-57	10-28-57	10-28-57	10-28-57	2.0	4.0	2.0	4.0	2.0	4.0	2.0	4.0
CAL DUE DATE:	10-28-57	10-28-57	10-28-57	10-28-57	2.0	4.0	2.0	4.0	2.0	4.0	2.0	4.0
BACKGROUND:	2.0	4.0	2.0	4.0	2.0	4.0	2.0	4.0	2.0	4.0	2.0	4.0
EFFICIENCY:	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1
MDA:	405	405	405	405	405	405	405	405	405	405	405	405

MDA = CF X [2.71 + 4.65] / BACKGROUND (CPM)

LOG NUMBER: \_\_\_\_\_

FOR: \_\_\_\_\_ PWRE \_\_\_\_\_ PRL \_\_\_\_\_

OTHER \_\_\_\_\_

BUILDING/LOCATION: T900 E

DATE: 8-13-57

ITEM DESCRIPTION: Field office T-900 E

Scrub-leader to be shipped off-site

Surveyed in accordance with instruction sheet & map.

COMMENTS:

PERFORMED BY (PRINT NAME): M402

RCT SIGNATURE

EMP#

DATE

RO SUPERVISION PRINT NAME

RO SUPERVISION SIGNATURE

DATE

33

# RADIOLOGICAL CONTAMINATION SURVEY FORM

LOG / SURVEY NUMBER

PAGE 2 OF 3

DRAWING

SURVEY RESULTS (DPM/100 CM SQ)

See attached  
Map

SWTP #S	LOCATION/DESCRIPTION	REMOVABLE		TOTAL ALPHA (FRISK / M SEC COUNT)	TOT BE GAN
		ALPHA	BETA/ GAMMA		
1		<18	<205	<60	<4
2		<18	<205	<60	<4
3		<18	<205	<60	<4
4		<18	<205	<60	<4
5		<18	<205	<60	<4
6		<18	<205	<60	<4
7		<18	<205	<60	<4
8		<18	<205	<60	<4
9		<18	<205	<60	<4
10		<18	<205	<60	<4
11		<18	<205	<60	<4
12		<18	<205	<60	<4
13		<18	<205	<60	<4
14		<18	<205	<60	<4
15		<18	<205	<60	<4
16		<18	<205	<60	<4
17		<18	<205	<60	<4
18		<18	<205	<60	<4
19		<18	<205	<60	<4
20		<18	<205	<60	<4
21		<18	<205	<60	<4

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# RADIOLOGICAL CONTAMINATION SURVEY FORM

LOG / SURVEY NUMBER \_\_\_\_\_

PAGE 3 OF 3

SURVEY RESULTS (DPM/100 CM SQ)

SWIP #S	LOCATION/DESCRIPTION	REMOVABLE		TOTAL ALPHA (FRISK / 60 SEC COUNT)	TOTAL BETA/ GAMMA
		ALPHA	BETA/ GAMMA		
22		<18	<205	<60	<455
23		<18	<205	<60	<455
24		<18	<205	<60	<455
25		<18	<205	<60	<455
26		<18	<205	<60	<455
27		<18	<205	<60	<455
28		<18	<205	<60	<455
29		<18	<205	<60	<455
30		<18	<205	<60	<455
31					
32					
33					
34					
35					
36					
37					
38					
39					
40					
41					
42					

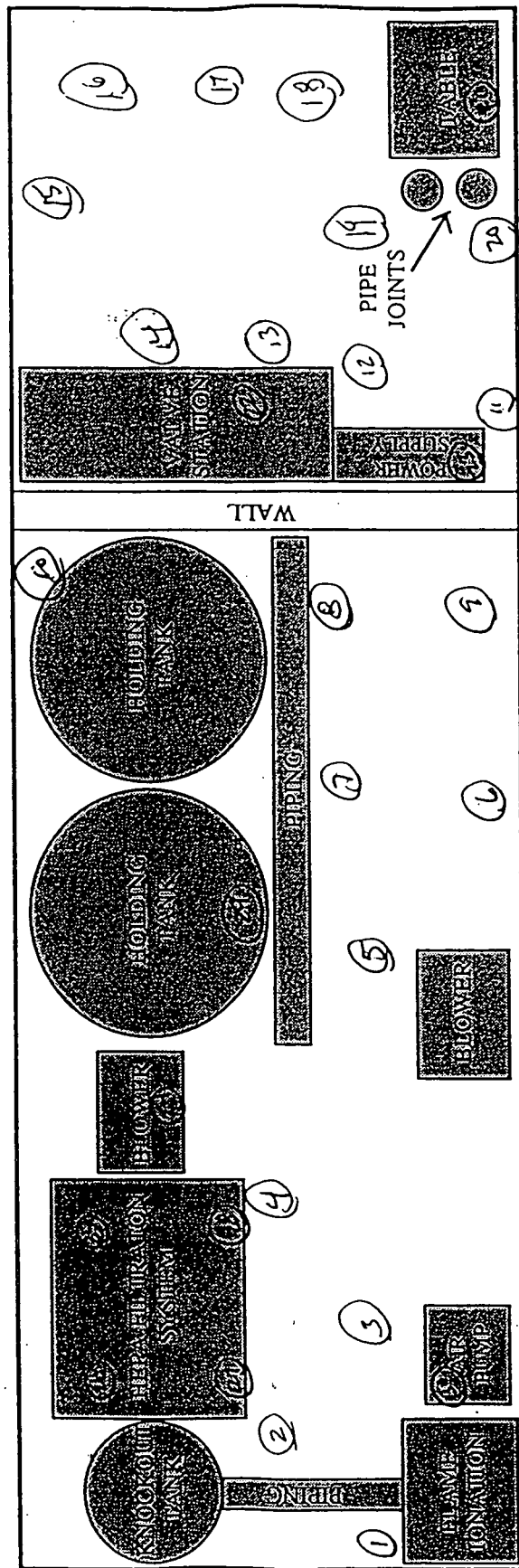
SURVEY RESULTS (DPM/100 CM SQ)

SWIP #S	LOCATION/DESCRIPTION	REMOVABLE		TOTAL ALPHA (FRISK / 60 SEC COUNT)	TOTAL BETA/ GAMMA
		ALPHA	BETA/ GAMMA		
43					
44					
45					
46					
47					
48					
49					
50					
51					
52					
53					
54					
55					
56					
57					
58					
59					
60					
61					
62					
63					

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# T900 E - Semi-Trailer



OBJECTS IN SEMI ARE NOT TO SCALE!!!

**ATTACHMENT 7.2**

**Asbestos and Lead Characterization Report for the T891 Trailer Cluster Including:**

**T891A, T891L, T891 M, T891N and T900E, August 1997**



Rocky Mountain  
Remediation Services, L.L.C.  
*...protecting the environment*

**RF/RMRS-97-055**

## **Asbestos and Lead Characterization Report**

**T891 Trailer Cluster Including:**

**T891A, T891L, T891M, T891N and T900E**

**Rocky Flats Environmental Technology Site**

**Prepared by:**

**Scientific Ecology Group for**

**Rocky Mountain Remediation Services**

**September 1997**

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## ATTACHMENTS

Attachment 1.0—RTG Exemption Letter
Attachment 1.1—Safety and Hygiene Chain of Custody Record and Analysis Request
Attachment 2.1—PLM Bulk Analysis, Percentage Composition by Volume Table
Attachment 3.1—Sample Results/Quality Control Tables
Attachment 3.2—Bulk Asbestos and Lead Sample Location Drawing

## ACRONYMS

ACBM	Asbestos containing building material
AHERA	Asbestos Hazardous Emergency Response Act
AAS	Atomic absorption spectroscopy
CCR	Colorado Code of Regulations
CFR	Code of Federal Regulations
EPA	U. S. Environmental Protection Agency
HUD	U. S. Housing and Urban Development
NIST	National Institute of Standards and Technology
NVLAP	National Voluntary Laboratory Accreditation Program
OSHA	Occupational Safety and Health Administration
PLM	Polarized light microscopy
PPM	Parts per million
QC	Quality Control
RESI	Reservoirs Environmental Services, Inc.
RFETS	Rocky Flats Environmental Technology Site
RMRS	Rocky Mountain Remediation Services, L. L. C.
RTG	Resource Technology Group, Inc.
SEG, CO	Scientific Ecology Group, Colorado



## 1.0 INTRODUCTION

On March 14, 1997, Trailer 891A was inspected for asbestos containing building materials (ACBM) by Rocky Mountain Remediation Services, L. L. C. (RMRS) Industrial Hygiene staff. This information is included in this report (see Attachment 1.0). During the week of July 14-18, 1997, Trailers T891A, T891L, T891M, T891N, and T900E were inspected for ACBM and lead in paint by Scientific Ecology Group, Colorado (SEG) staff. T900E is exempt from lead and asbestos sampling (see Attachment 1.0). This information is also included in this report (see Appendix B). The purpose of this inspection is to prepare for and facilitate the relocation of the trailers.

The asbestos inspection was conducted according to the guidelines set forth by the Asbestos Hazard Emergency Response Act (AHERA) and complies with the United States Environmental Protection Agency (EPA), Occupational Safety and Health Administration (OSHA) and State of Colorado regulations covering asbestos inspections.

The lead in paint inspection was conducted in accordance with the guidelines established by the US Department of Housing and Urban Development (HUD) published the Guidelines for the Evaluation and Control of Lead Based Paint Hazards in Housing pursuant the Title X of the Housing and Community Development Act of 1992.

Appendix B contains the location, descriptions of ACBM and metals containing paint on building surfaces. Materials were analyzed and results in tabular form are contained in Appendix B. Each sampled building material is described as either asbestos or non-asbestos containing. Each sampled painted surface is described as either metals or non-metals containing paint.

## 2.0 ASBESTOS SURVEY

### 2.1 INSPECTION PROCEDURES

Bulk samples were acquired to determine the presence of ACBM. Suspect materials were chosen based on historical significance or on the judgement of the accredited inspector. Each sample was assigned an individual number made up of the trailer number, the date the sample was acquired, the initials of the sampling technician, and a three digit number in sequence. Quality Control samples are designated in the Bulk Sample Data Table as (QC).

A total of 25 samples were acquired from suspected materials. These materials included thermal systems insulation and miscellaneous materials. All samples were acquired in a random manner representative of the suspected material. Trailer T900E is exempted from lead and painting sampling (see Attachment 1.0)

All bulk samples were analyzed by Reservoirs Environmental Services, Inc. (RESI) of Denver, Colorado. RESI is accredited through the National Institute of Standards and Technology (NIST) and participates in the NIST National Voluntary Laboratory Accreditation Program (NVLAP) as required by the EPA. Bulk samples were analyzed by polarized light microscopy (PLM) in compliance with guidelines established by the EPA 40 CFR 763, Subpart F, ( see Attachment 2.1). Asbestos concentrations were visually estimated and reported in percent by layer of each sample.

## **2.2 DESCRIPTION AND HAZARD ASSESSMENT OF ACBM**

### **2.2.1 Twelve-inch Tan with White Streaks Floor Tile**

Approximately 350 sq. ft of brown and tan mottled 12" square floor tile with yellow mastic, located in Trailer T891A, dispersed throughout.

The EPA/AHERA hazard assessment category for the tile is *Miscellaneous Material In Good Condition*. The appropriate response action for the material is to periodically evaluate for damage and to maintain in good condition. This material should not be disturbed during relocation.

## **2.3 DESCRIPTION OF MATERIALS TESTING NEGATIVE FOR ASBESTOS**

### **2.3.1 Ceiling Drywall Panels**

The drywall ceiling panels located in all four trailers were inspected for the purposes of this report, tested below detectable levels for asbestos. Homogeneous panels were discovered in the furnace enclosure in T891L, and can also be assumed to contain less than detectable levels of asbestos.

### **2.3.2 Tan/Beige Mottled 12" Floor Tile**

The tan mottled 12" floor tile and associated yellow mastic in all four trailers were inspected for the purposes of this report, tested below detectable levels for asbestos.

### **2.3.3 Brown Mottled 12" Floor Tile**

The 12" brown mottled floor tile and tan mastic in Trailer T891N tested below detectable levels for asbestos.

### **2.3.4 Light Brown Mottled 12" Floor Tile**

The 12" brown mottled floor tile and clear mastic in Trailer T891L tested below detectable levels for asbestos.

### **2.3.5 Black Tar Paper**

The black tar paper on the underside of Trailers T891A, T891M, and T891N tested below detectable levels for asbestos.

### **2.3.6 Black Tar Roofing Mastic**

The black tar roofing mastic on the trailer to porch roof joint on T891A tested below detectable levels for asbestos. Based on this information, other black roofing mastics discovered on T891L, T891M, and T891N may be assumed to be non-asbestos, although none was discovered at the time of inspection.

### **2.3.7 Brown Paneling Adhesive**

The brown panelling adhesive discovered in T891N tested below detectable levels for asbestos. Although no adhesive was discovered in other subjected trailers, should brown paneling adhesive be discovered, it may be assumed that this adhesive contains less than detectable levels of asbestos.

### 3.0 LEAD IN PAINT SURVEY

#### 3.1 INSPECTION PROCEDURES

Bulk paint samples were acquired from building surfaces to determine the presence of lead, cadmium, chromium and arsenic. Suspect paints were chosen based on historical significance or on the judgement of the accredited inspector.

A total of 13 samples were acquired from suspected painted surfaces. These surfaces included the interior and exterior paints. Samples were chosen for their distinct color variations. All samples were acquired in a random manner representative of the individual color.

Based on historical data from other site structures, the bright red and yellow paint associated with fire and safety markings in addition to the grey paint on steps and porches was assumed to be metals containing. Trailer T900E is exempt from lead and painting sampling (see Attachment 1.0)

All paint samples were analyzed by Schuller Labs, a third party independent lab located in Denver, Colorado. Schuller is properly accredited for bulk paint analysis through the American Industrial Hygiene Association. Bulk paint samples were analyzed with atomic absorption spectroscopy (AAS) (EPA Method SW 846-3050/7420). Results for the purposes of determining occupational exposure are reported in parts per million (see Attachment 3.1).

#### 3.2 LEAD IN PAINT LOCATIONS AND DESCRIPTIONS

Attachment 3 shows a summary of the results of bulk samples for lead/metals in the paint on subject trailers in the T891 Cluster. Although inconsistencies occurred due to differing ages of the structures, the overall assumption is that the majority of the paints inspected do include some type of metal. Of special interest is the white painted metal skirting (See Section 3.2.1), which consistently tested positive for detectable levels of lead.

All paints surveyed were in good condition with the exception of the white paint on the porches. T891A porches showed minimal deterioration, but T891L, T891M and T891N all showed signs of flaking and peeling. Extreme care should be exercised when relocating or disassembling/detaching these structures from the trailers. Attachment 3.2 shows these asbestos and lead sample locations.

##### 3.2.1 White Paint on Sheet Metal Skirting

The white paint on the sheet metal skirting on Trailers T891A, T891L and T891M tested positive for detectable levels of lead, chromium and zinc.

##### 3.2.2 Cream Paint on Sheet Metal Siding

The cream paint on the sheet metal siding on Trailers T891A, T891L, T891M and T891N tested positive for detectable levels of lead, chromium and zinc.

##### 3.2.3 White Paint on Porch Framing

The white paint on the T891A west porch framing tested positive for detectable levels of arsenic, chromium and zinc. This same paint tested negative for detectable levels of lead.

### 3.2.4 White Paint on Textured Ceiling Panels

The white paint on the ceiling panels in T891M and T891N tested positive for lead. T891L, T891M, and T891N ceiling panels tested positive for zinc. T891N also tested positive for detectable levels of chromium.

## 4.0 LEAD/METALS IN PAINT REGULATORY REVIEW AND RECOMMENDATIONS

### 4.1 REGULATORY REVIEW - RELOCATION

In June 1995, the U. S. Department of Housing and Urban Development (HUD) published the *Guidelines for the Evaluation and Control of Lead Based Paint Hazards in Housing* pursuant to Title X of the Housing and Community Development Act of 1992. This document replaced the 1990 publication, *Lead Based Paint: Interim Guidelines for Hazard Identification and Abatement in Public and Indian Housing*. The new publication addresses lead hazards posed by paint, dust and soil in the residential environment. It provides specific guidelines for XRF and bulk paint sampling in housing including sampling locations, sample collection procedures and laboratory analysis procedures. In addition, it provides guidelines for hazard assessment of lead based paint, abatement of lead based paint, and clearance sampling. The guidelines define lead based paint as paint that contains 1.0 milligrams or more of lead per square centimeter of surface area. Although the guidelines act as a good reference for lead paint inspections, they do not apply to non-HUD homes and are not enforceable by law unless a Federal, State or RFETS directive requires adherence to all or parts of the publication.

OSHA's CFR 1926.62 applies to the disturbance or demolition of structures that contain detectable levels of lead in paint. Detection limits of 10 parts per million (PPM) are considered as the lowest limit normally achievable by standard laboratory analysis. At or below this limit OSHA believes exposure poses limited risk to workers.

However, if the employer suspects that lead may be present, the employee protection and safety precautions as outlined in CFR 1926.62 apply, especially to employee medical surveillance and monitoring.

### 4.2 LEAD IN PAINT DISCLOSURE TO BUYERS OF THE TRAILERS

On Wednesday, March 6, 1996, the EPA published 24 CFR Part 35 and 40 CFR Part 745 which outlined those requirements for disclosure. In the case of the T891 Trailers, several important issues are listed below:

- A lead based paint hazard is defined as exposure from paint, dust or soil containing lead.
- Those trailers built after 1978 are exempt from disclosure. T891A and T891N require disclosure, T891M and T891L do not require disclosure by this regulatory guideline.
- All of the trailers are considered "0-bedroom units," and are also exempt from disclosure.
- RMRS/RFETS is responsible for disclosure of known lead hazards only.
- In the event a purchaser is found for any non-exempt trailers, said purchaser has ten days to identify those hazards at their own expense. The purchaser has no obligation to purchase until this risk assessment is completed.

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**Appendix A**  
**Inspector Certifications**

### Statement of Certification

The asbestos and lead building inspection evaluation performed on Trailers **A, L, M and N** in the **T891 Cluster** was performed in accordance with applicable regulations, and employed only EPA AHERA accredited personnel.

Inspector: Michael N. Schluterbusch

EPA Accreditation: [REDACTED]

State of Colorado Certification: [REDACTED]

I hereby attest and certify that I performed the asbestos and lead building inspection evaluation on Trailers **A, L, M and N** in the **T891 Cluster** at the Rocky Flats Environmental Technology Site.

Signature: \_\_\_\_\_ Date: \_\_\_\_\_

## **Appendix B**

### **Bulk Asbestos and Lead Sample Lab/Data Tables**

ASBESTOS AND LEAD  
CHARACTERIZATION REPORT  
FOR THE T891 TRAILERS

RF/RMRS-97-055  
Rev. 1, Page B-2 of B-5  
Date Effective: 09/09/97

**Appendix B Asbestos Bulk Sample Data Table**

Sample Number	Sample Description and Location	Lab Result
T891A-97-04-14-64-01	12" tan with white streaks floor tile with yellow mastic; from east center office, 1' south of north wall, 3' west of east wall.	5% in tile
T891A-97-04-14-64-02	12" tan with white streaks floor tile with yellow mastic; from west area, 5' north of south wall, 2' east of west wall.	3% in tile
T891A-97-04-14-64-03	12" tan with white streaks floor tile with yellow mastic; from main center area, 3' north of south wall, 2' east of west wall.	5% in tile
T891A-97-04-14-64-04	12" tan mottle tile with yellow mastic; from far east office, 3' south of north wall, 3' west of east wall.	ND
T891A-97-04-14-64-05	12" tan mottle tile with yellow mastic; from main center area, 2' south of north wall, 2' west of east wall.	ND
T891A-97-04-14-64-06	12" tan mottle tile with yellow mastic; from far east office, 5' south of north wall, 2' east of west wall.	ND
T891A-97-04-14-64-07	12" tan tile with yellow mastic, from west area, 1' south of north wall, 1' west of east wall.	ND
T891A-97-04-14-64-08	White textured ceiling panel; from center main area, 5' south of north wall, 5' east of west wall.	ND
T891A-97-04-14-64-09	White textured ceiling panel; from west area, 5' south of north wall, 8' east of west wall.	ND
T891A-97-04-14-64-10	Cardboard and fiberglass/foil insulation; from east center office, 5' south of north wall, 3' east of west wall.	ND
T891A-97-04-14-64-12	Cardboard and fiberglass/foil insulation; from west area, 5' south of north wall, 8' east of west wall.	ND
T891A-97-04-14-64-13 (QC)	Cardboard and fiberglass/foil insulation; from west area, 5' south of north wall, 8' east of west wall.	ND
T981A-970717-MS-004	Tar paper on underside of trailer, north side, center	ND
T891A-970717-MS-005	Roofing tar; from south edge at NE angle of east porch.	ND
T891L-970717-MS-004	12" floor tile, light brown mottle with clear mastic, from east office, 5' north of the south wall, 4' west of the east wall.	ND
T891L-970717-MS-005	12" floor tile beige mottle with tan mastic; from main area, 1' south of north wall, 3' east of restroom wall.	ND
T891L-970717-MS-006	12" tan mottle tile with yellow mastic; from far east office, 5' south of north wall, 2' east of west wall.	ND
T891L-970717-MS-007 (QC)	12" floor tile, light brown mottle with clear mastic; from east office, 5' north of south wall, 4' west of east wall.	ND
T891M-97017-MS-004	12" floor tile, beige mottle with yellow mastic; from main area, 1' south of the north wall, 7' west of the east wall.	ND



ASBESTOS AND LEAD  
CHARACTERIZATION REPORT  
FOR THE T891 TRAILERS

RF/RMRS-97-055  
Rev. 1, Page B-3 of B-5  
Date Effective: 09/09/97

Sample Number	Sample Description and Location	Lab Result
T891M-97017-MS-005	Drywall ceiling panel with white texture; from main area, 4' north of the south wall, 11' west of the east wall.	ND
T891N-970717-MS-004	Thin white textured ceiling panel; from main area, 3' south of north wall, 3' west of east wall.	ND
T891N-970717-MS-005	12" floor tile, brown mottle with tan mastic; from west office, 7' south of north wall, 7' east of the west wall.	ND
T891N-970717-MS-006	12" floor tile, light brown mottle and tan mastic; from main area, 4' north of the south wall, 12' east of west wall.	ND
T891N-970717-MS-007	Brown adhesive behind wood wall panelling; from east office, south wall center, 4' from the floor.	ND

Note: ND means None Detected.

ASBESTOS AND LEAD  
CHARACTERIZATION REPORT  
FOR THE T891 TRAILERS

RF/RMRS-97-055  
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Date Effective: 09/09/97

**Appendix B Lead Paint Bulk Sample Data Table**

Sample Number	Sample Description and Location	Lab Result (ppm)
T891A-970717-MS-001	White paint, on sheet metal skirting; from exterior north side, 20' west of NW corner, 2' from the ground.	As: ND Cr: 160 Pb: 140 Zn: 120
T891A-970717-MS-002	Cream paint on sheet metal siding; from exterior north side, 18' west of NE corner, 3' from the ground.	As: ND Cr: 100 Pb: 140 Zn: 120
T891A-970717-MS-003	White paint on wood: from west porch framing, interior east wall, 8' south of trailer wall, 3' from the base.	As: 2510 Cr: 2790 Pb: ND Zn: 1510
T891L-970717-MS-001	White paint on metal skirting; from east exterior, at north side of hitch frame.	As: ND Cr: 160 Pb: 50 Zn: 80
T891L-970717-MS-002	Cream paint on metal siding; from east exterior, at north side of hitch frame.	As: ND Cr: 280 Pb: 200 Zn: 100
T891L-970717-MS-003	White paint on drywall ceiling; from main center area, 3' south of north wall, 2' west of east wall.	As: ND Cr: ND Pb: ND Zn: 280
T891L-970730-MS-008 (QC)	Cream paint on metal siding; from east exterior, at north side of hitch frame.	As: ND Cr: 240 Pb: 190 Zn: 80
T891M-970717-MS-001	White paint on metal skirting; from north exterior, 22' east of NW corner, 2' from the ground.	As: ND Cr: 40 Pb: 120 Zn: 30
T891M-970717-MS-002	Cream paint on metal siding; from north exterior, 23' east of NW corner, 3' from the floor.	As: ND Cr: 30 Pb: 100 Zn: 10

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ASBESTOS AND LEAD  
CHARACTERIZATION REPORT  
FOR THE T891 TRAILERS

RF/RMRS-97-055  
Rev. 1, Page B-5 of B-5  
Date Effective: 09/09/97

Sample Number	Sample Description and Location	Lab Result (ppm)
T891M-970717-MS-003	White paint on drywall ceiling; from center of restroom ceiling.	As: ND Cr: 160 Pb: 50 Zn: 80
T891N-970717-MS-001	White paint on vinyl skirting; from SW corner, south side, 2' from the ground.	As: ND Cr: ND Pb: ND Zn: ND
T891N-970717-MS-002	Cream paint on metal siding; from, south side, 21' west of SE corner, 3' from the ground.	As: ND Cr: 180 Pb: 420 Zn: 140
T891N-970717-MS-003	White paint on drywall ceiling; from main area, 4' south of the north wall, 4' west of the east wall.	As: ND Cr: 10 Pb: 30 Zn: 30

Note: ND means None Detected.

**Attachment 1.0**  
**Resource Technologies Group, Inc. (RTG)**  
**Exemption Letter**



**RESOURCE  
TECHNOLOGIES  
GROUP, INC.**

3800 B. Wadsworth Blvd., Suite 155  
Lakewood, Colorado 80235-2205  
303-989-8511  
FAX 303-989-8188

April 24, 1997

Mr. Ty Vess  
Rocky Mountain Remediation Services, Inc.  
Rocky Flats Plant  
PO Box 464  
Golden, Colorado 80402-0464

Subject: Asbestos and Lead Use  
Mobile Soil Vapor Extraction Project

Dear Mr. Vess:

Per your request, we have reviewed our files concerning the potential use of asbestos or lead containing products on the Mobile Soil Vapor Extraction Pilot Unit. Resource Technologies Group, Inc. (RTG) originally designed and constructed this system under EG&G Rocky Flats, Inc Purchase Order number 233927JS1. The unit was delivered to the site in August, 1993. A review of the records indicates the following:

- (1) All equipment and materials used in the fabrication of the unit were of new manufacture. No used equipment potentially painted with lead-based paint was used.
- (2) There was no insulation or other materials used in the unit that could potentially contain asbestos.
- (3) All paintings and coatings were commercially available epoxy products, and were purchased new for this project. Therefore, in accordance with existing law, these products were not lead-based.

RTG hereby certifies, that to the best of our knowledge, that there were no lead or asbestos based products used in the manufacture of the Mobile Soil Vapor Extraction Pilot Unit.

Please feel free to contact me with any questions on this matter.

Sincerely,

RESOURCE TECHNOLOGIES GROUP, INC.



Kevin W. Conroy, P.E.  
Engineering Manager

**Attachment 1.1**

**Safety and Hygiene Chain of Custody Record and Analysis Request**

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Golden, CO 80402-0464 12876  
Safety and Hygiene Chain of Custody Record and Analysis Request

### Safety and Hygiene Chain of Custody Record and Analysis Request

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Golden, CO 80402-0464  
Safety and Hygiene Chain of Custody Record and Analysis Request

44792

Name of Originator: <u>M. Schultebusch</u>		Title: <u>Inspector</u>		Bldg/Ext: <u>T130J/4215</u>		Date: <u>7/17/97</u>		Page: <u>1</u> of <u>1</u>	
SAMPLE NUMBER Bldg/Y/M/D/P#/S#	ANALYZE FOR	VOLUME liters	SAMPLE TIME/	MEDIA	P A B	Personal Area Bulk	REMARKS	Lab Number	
T891L-970717-MS-004	Asbestos				B		Archive For P.C.		
T891L-970717-MS-005					B				
T891L-970717-MS-006					B				
T891N-970717-MS-004	Asbestos				B				
T891N-970717-MS-005					B				
T891N-970717-MS-006					B				
T891N-970717-MS-007					B				
T891A-970717-MS-001	Asbestos				B				
T891A-970717-MS-002					B				
T891M-970717-MS-004	Asbestos				B				
T891M-970717-MS-005					B				
Relinquished by <u>T. Sangaline</u>		Received by <u>[Signature]</u>		Time/Date <u>0715 7/18/97</u>		Relinquished by <u>[Signature]</u>		Received by <u>[Signature]</u>	
Relinquished by		Received by		Time/Date		Relinquished by		Received by	
Relinquished by		Received by		Time/Date		Relinquished by		Received by	
Relinquished by		Received by		Time/Date		Relinquished by		Received by	
Relinquished by		Received by		Time/Date		Relinquished by		Received by	
Report and Billing Instruction		Analysis Request				Seal# (Release #) <u>97J2204</u>			
Verbal To: <u>Tony Sangaline</u> Fax To: <u>966-4641 - 966-6538</u> Report To: <u>Karen Hill</u> Bill To: <u>Karen Hill</u> P.O.#/Release: <u>660402-00 /</u> Lab: <u>Reservoir</u>		<input checked="" type="checkbox"/> Standard Service <input type="checkbox"/> Rush <input type="checkbox"/> Other _____  <input type="checkbox"/> Standard Service <input type="checkbox"/> 24 Rush <input type="checkbox"/> 2 Rush <input type="checkbox"/> Other _____				Condition of Seal: <input type="checkbox"/> Broken <input type="checkbox"/> Unbroken  Signature: _____ Comments: _____ _____ _____			

RF-47530 (Rev 9/91)

White - Return to Originator    Yellow - Lab Copy    Green - Sample Custodian    Blue - Originator

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07/28/97 10:14 FAX 303 663 6186 KES, ENV, SERV. 41002





EG&G Rocky Flats Plant, Inc.

Golden, CO 80402-0484

Safety and Hygiene Chain of Custody Record and Analysis Request

97071810 No: 7/25/97

Name of Originator: M. Schindler, Title: Inspector Bldg/Ext: 71305/4215 Date: 7/17/97 Page 1 of 1																																						
SAMPLE NUMBER Bldg/Ext/DP/PS#	ANALYZE FOR	VOLUME liters	SAMPLE TIME/	MEDIA	P A B	Personal Area Bulk	REMARKS	Lab Number																														
1891A-920212-MS-001	Lead, cadmium						Please achieve detection limit of 10 ppm or less																															
9021																																						
903																																						
1891N-220212-MS-001																																						
9021																																						
903																																						
1891B-220212-MS-001																																						
9021																																						
903																																						
1891M-920212-MS-001																																						
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RF-47530 (Rev 9/91)

58

M. Schlüterbusch

Lab Location:

**MBA:**

371

559

771

881

## Contractor Lab

Schüler

78912

KAISER-HILL ANALYTICAL LABORATORIES

### CHAIN OF CUSTODY

[illegible]

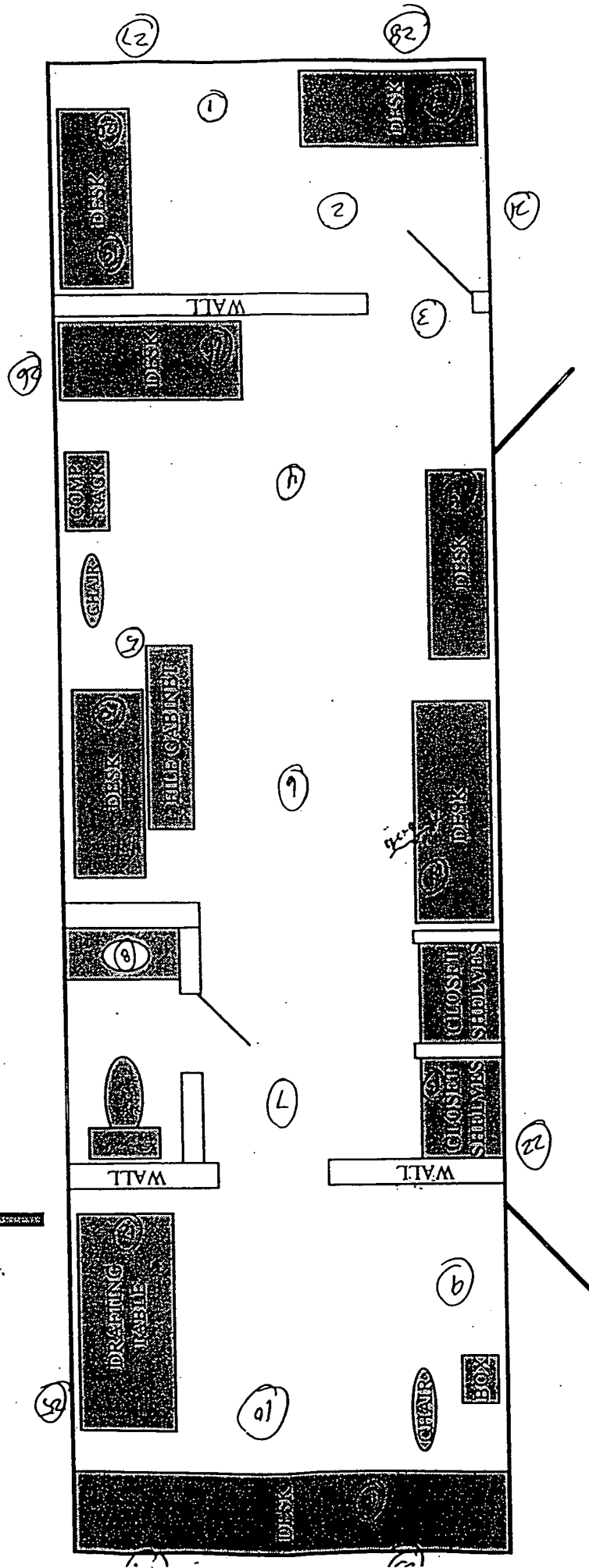
Relinquished By / ORG	Date/Time	Received By / ORG.	Date/Time	LABORATORY USE ONLY		Y / N
<i>[Signature]</i> / RMC	7/25/12 1045	<i>[Signature]</i> / ASI	7/29/12 1045	PKG RECD/CUSTODY SEALS INTACT		
/		/		SAMPLE LABELS/COCs AGREE		
/		/		TEMPERATURE AT TIME OF RECEIPT ____ °C		N/A
/		/		CORRECTED COPY ATTACHED		
/		/		Charge #:		Cost Center:

marks: Please achieve D.L. of 10 ppm.  
Please analyze for Lead, cadmium, chrome arsenic, zinc RUSH!!!

4C Approval for movement of nonaccountable radioactive samples from an MAA. TID/NMDTR is not required for movement of this material.  
4C Transfer Approval:

54

T891 M



OBJECTS IN ROOM ARE NOT TO SCALE!!!

29 30 Located on roof

60

East Door 24 on 13  
West 13 on 45

**Trailer 891N Removal Project**  
**Characterization Survey Radiological Instructions**

Location/Room: T891N

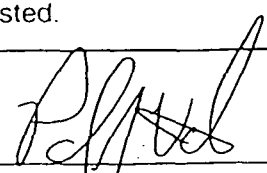
Item/Area Description <sup>1</sup>	# of Alpha/Beta Swipes <sup>2</sup>	# of Direct Alpha/Beta Measurements <sup>2</sup>	Scan Survey <sup>3</sup>	Special Instructions
Floor	10	10	N/A	Obtain measurements on floor surface throughout the trailer
Sink Drain	A minimum of one measurement inside each sink	A minimum of one measurement inside each sink	N/A	Obtain measurements on accessible surfaces of sinks
Desk, File Cabinets, etc.	A minimum of one measurement per component	A minimum of one measurement per component	N/A	Obtain measurements on accessible surfaces of components
Trailer Exterior	2 per side and roof	2 per side and roof	N/A	Obtain measurements on exterior surfaces

**Notes**

<sup>1</sup> See attached trailer layout

<sup>2</sup> Surveys to be performed in accordance with 4-K62-ROI-03.01, "Performance of Surface Contamination Surveys". Other radiological references: 1-P73-HSP-18.10, "Radioactive Material Transfer and Unrestricted Release of Property and Waste", 4-S23-ROI-03.02, "Radiological Requirements for Unrestricted Release", and 4-N83-REP-1108, "Radioactive Material Management Area (RMMA) Determination".

<sup>3</sup> Perform an alpha/beta scan survey of the percentage of accessible surfaces, including fixed equipment, as listed.

Prepared By: 

Date: 8/4/97

Reviewed By: 

Date: 08/04/97

41

# RADIOLOGICAL CONTAMINATION SURVEY FORM

PAGE 1 OF 2

LOG NUMBER:	
FOR: _____ P/WRE _____ PRL _____ RWP <input checked="" type="checkbox"/> OTHER _____	
BUILDING/LOCATION: <u>Trailer T-891N</u>	ROOM: <u>See Map</u>
DATE: <u>8-12-97</u>	TIME: <u>1230</u>
ITEM DESCRIPTION: <u>Field Office T-891N</u> <u>to be shipped offsite</u>	
COMMENTS: <u>Surveyed in accordance</u> <u>with attached instruction &amp;</u> <u>drawing</u>	
PERFORMED BY (PRINT NAME): <u>M. [redacted]</u> <u>[Signature]</u> RCT SIGNATURE EMP# <u>18-1197</u> DATE <u>8-11-97</u>	

*Copy*

## REMOVABLE CONTAMINATION SURVEY INSTRUMENT DATA

MFR:	EBER.	EBER.	EBER.	EBER.
MODEL:	S.A.C. 4	S.A.C. 4	S.A.C. 4	S.A.C. 4
SERIAL #:	<u>B24</u>	<u>1050</u>		
CAL DATE:	<u>3-97</u>	<u>3-97</u>		
CAL DUE DATE:	<u>9-97</u>	<u>9-97</u>		
MFR:	EBER.	EBER.	EBER.	EBER.
MODEL:	B.C. 4	B.C. 4	B.C. 4	B.C. 4
SERIAL #:	<u>Bc.838</u>	<u>Bc.770</u>		
CAL DATE:	<u>6-97</u>	<u>7-97</u>		
CAL DUE DATE:	<u>12-97</u>	<u>1-98</u>		

## TOTAL CONTAMINATION SURVEY INSTRUMENT DATA

MFR:	<u>N.E. TECH</u>			
MODEL:	<u>ELECTRA</u>			
SERIAL #:	<u>1265</u>			
CAL DATE:	<u>4-97</u>			
CAL DUE DATE:	<u>10-97</u>			
BACKGROUND:	<u>2.0</u>			
EFFICIENCY:	<u>33.1</u>			
MDA:	<u>455</u>			

REVIEWED BY:

[Signature] RO SUPERVISION PRINT NAME  
[Signature] RO SUPERVISION SIGNATURE  
8/13/97 DATE

$$MDA = CF \times [2.71 + 4.65 \sqrt{\text{BACKGROUND (CPM)}}]$$

62

# RADIOLOGICAL CONTAMINATION SURVEY FORM

LOG / SURVEY NUMBER

PAGE

2

OF

3

DRAWING

SURVEY RESULTS (DPM/100 CM SQ)

See attached Map.

SWTP #S	LOCATION/DESCRIPTION	REMOVABLE		TOTAL ALPHA (FRISK / 40 SEC COUNT)	TO BE GAT
		ALPHA	BETA/ GAMMA		
1		<18	<205	<60	<4
2		<18	<205	<60	<4
3		<18	<205	<60	<4
4		<18	<205	<60	<4
5		<18	<205	<60	<4
6		<18	<205	<60	<4
7		<18	<205	<60	<4
8		<18	<205	<60	<4
9		<18	<205	<60	<4
10		<18	<205	<60	<4
11		<18	<205	<60	<4
12		<18	<205	<60	<4
13		<18	<205	<60	<4
14		<18	<205	<60	<4
15		<18	<205	<60	<4
16		<18	<205	<60	<4
17		<18	<205	<60	<4
18		<18	<205	<60	<4
19		<18	<205	<60	<4
20		<18	<205	<60	<4
21		<18	<205	<60	<4

# RADIOLOGICAL CONTAMINATION SURVEY FORM

LOG / SURVEY NUMBER \_\_\_\_\_

PAGE 3 OF 3

SURVEY RESULTS (DPM/100 CM SQ)

SURVEY RESULTS (DPM/100 CM SQ)

SWIP #S	LOCATION/DESCRIPTION	REMOVABLE		TOTAL ALPHA (FRISK / 60 SEC COUNT)	TOTAL BETA/ GAMMA
		ALPHA	BETA/ GAMMA		
22		<18	<215	<60	<455
23		<18	<205	<60	<455
24		<18	<205	<60	<455
25		<18	<205	<60	<455
26		<18	<205	<60	<455
27		<18	<205	<60	<455
28		<18	<205	<60	<455
29		<18	<205	<60	<455
30		<18	<205	<60	<455
31					
32					
33					
34					
35					
36					
37					
38					
39					
40					
41					
42					

SWIP #S	LOCATION/DESCRIPTION	REMOVABLE		TOTAL ALPHA (FRISK / 60 SEC COUNT)	TOTAL BETA/ GAMMA
		ALPHA	BETA/ GAMMA		
43					
44					
45					
46					
47					
48					
49					
50					
51					
52					
53					
54					
55					
56					
57					
58					
59					
60					
61					
62					
63					

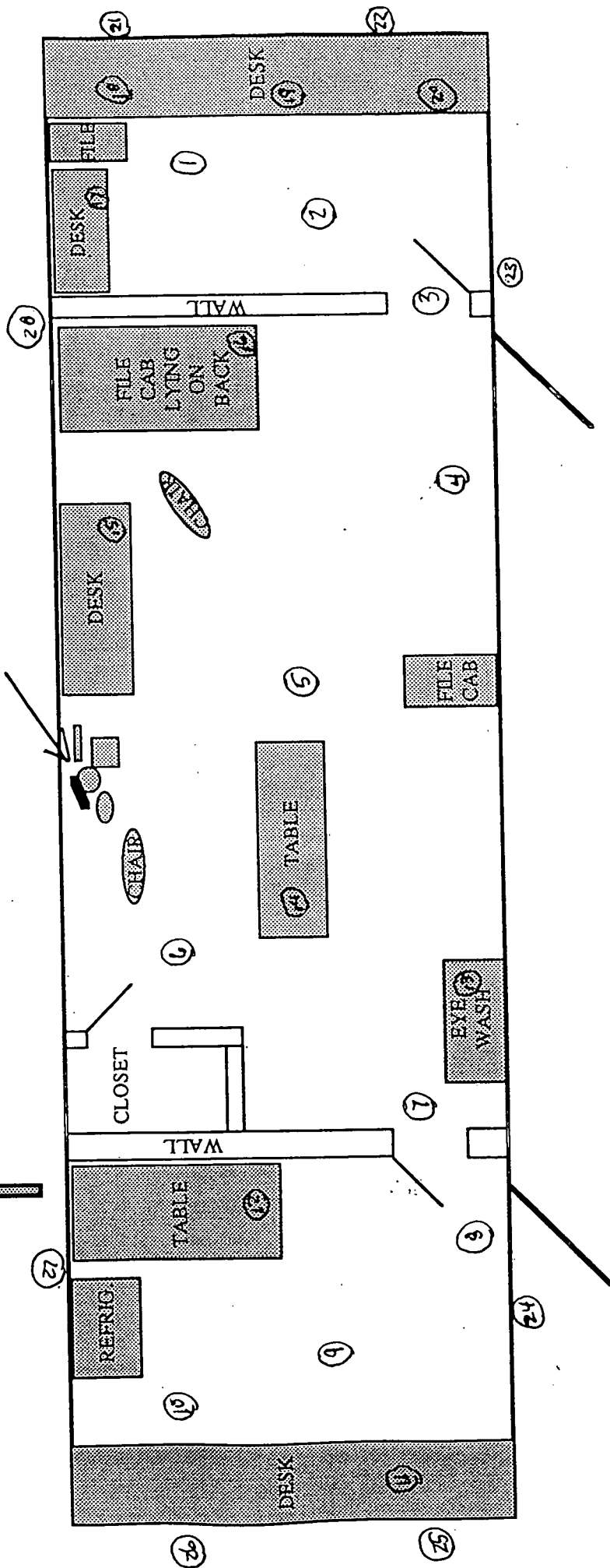
64



T891 N



MISCELLANEOUS GARBAGE



OBJECTS IN ROOM ARE NOT TO SCALE!!!

29 { 30 Located on roof

65

**COPY** Matt 7640  
5085 Page

# T900E Characterization Survey Radiological Instructions

Location/Room: T900E Semi-Trailer

Item/Area Description <sup>1</sup>	Radiological Survey <sup>2</sup>		Scan Survey <sup>3</sup>	Special Instructions
	# of Alpha/Beta Swipes	# of Direct Alpha/Beta Measurements		
Floors	20	20	N/A	Obtain measurements on floor surfaces throughout the room
HEPA Filter System	A minimum of 5 measurements	A minimum of 5 measurements	N/A	Obtain measurements on accessible interior surfaces of the HEPA system
Misc. Tanks, Blower, Table, etc.	A minimum of 1 measurement per component	A minimum of 1 measurement per component	N/A	Obtain measurements on accessible surfaces of each component

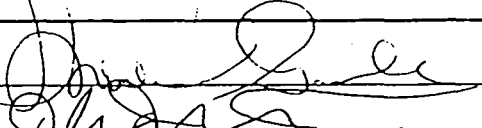
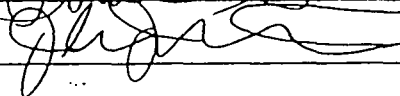
## Notes

<sup>1</sup> See attached map of building layout.

<sup>2</sup> Surveys to be performed in accordance with 4-K62-ROI-03.01, "Performance of Surface Contamination Surveys". Other radiological references are: 1-P73-HSP-18.10, "Radioactive Material Transfer and Unrestricted Release of Property and Waste", 4-S23-ROI-03.02, "Radiological Requirements for Unrestricted Release", and 4-N83-REP-1108, "Radioactive Material Management Area (RMMA) Determination".

<sup>3</sup> Perform an alpha/beta scan survey of the percentage of the accessible surfaces, including fixed equipment, as listed.

## Review and Approval

Prepared By:		Date:	8/6/97
Reviewed By:		Date:	8/6/97

66

**Attachment 2.1**

**PLM Bulk Analysis, Percentage Composition by Volume Table**

# RESERVOIRS ENVIRONMENTAL SERVICES, INC.

NVLAP Accredited Laboratory #1898

Page 1 of 3

TABLE I. PLM BULK ANALYSIS, PERCENTAGE COMPOSITION BY VOLUME

RES Job Number: RES 42848-1  
 Client: Kaiser-Hill Company, LLC  
 Client Project: 97P1585/GC040000,  
 Date Samples Received: April 25, 1997  
 Analysis Type: PLM Short Report, Bulk  
 Turnaround: 3-5 Day

Note: The US EPA requires use of stratified analysis for NESHAP and AHERA compliance. Composite results only apply for specific exceptions.

Client Sample Number	Lab ID Number	Layer	Physical Description	Portion of Total Sample (%)	ASBESTOS CONTENT		Non-Asbestos Fibrous Components (%)								Non-Fibrous Components (%)
					BY LAYER	Visual Estimate (%)	C	G	S	H	W	T	O		
					Mineral		E	L	N	I	L	L	H		
							L	S	T	R	L	C	E		
							S	H					R		
T891A-97-04-14-64-01	EM 286111	A	Yellow resin	2		ND	5	0	0	0	0	0	0		95
		B	Brown wood	28		ND	98	0	0	0	0	0	0		2
		C	Tan/white tile	70	Chrysotile	5	0	0	0	0	0	0	0		95
T891A-97-04-14-64-02	EM 286112	A	Yellow resin	4		ND	2	0	0	0	0	0	0		98
		B	Tan/white tile	96	Chrysotile	3	0	0	0	0	0	0	0		97
T891A-97-04-14-64-03	EM 286113	A	Yellow resin	2		ND	1	0	0	0	0	0	0		99
		B	Brown wood w/brown debris	18		ND	60	0	0	0	0	0	0		40
		C	Tan/white tile	80	Chrysotile	5	0	0	0	0	0	0	0		95
T891A-97-04-14-64-04	EM 286114	A	Tan resin w/brown wood	15		ND	30	0	0	0	0	0	0		70
		B	Multicolored tile	85		ND	0	0	0	0	0	0	0		100
T891A-97-04-14-64-05	EM 286115	A	Brown wood w/tan resin	25		ND	70	0	0	0	0	0	0		30
		B	Multicolored tile	75		ND	0	0	0	0	0	0	0		100
T891A-97-04-14-64-06	EM 286116	A	Tan resin w/brown wood	10		ND	40	0	0	0	0	0	0		60
		B	Multicolored tile	90		ND	0	0	0	0	0	0	0		100
T891A-97-04-14-64-07	EM 286117	A	Tan tile	100		ND	0	0	0	0	0	0	0		100

ND = None Detected  
 TR = Trace

CELL = Cellulose  
 Mat = Material

ORG = Organic  
 Trem-Act = Tremolite-Actinolite

WOLL = Wollastonite  
 BRUC = Brucite

GYP = Gypsum  
 SYNTH = Synthetic

Analyst: PDL

Data QA

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# RESERVOIRS ENVIRONMENTAL SERVICES, INC.

NVLAP Accredited Laboratory #1896

Page 2 of 3

TABLE I. PLM BULK ANALYSIS, PERCENTAGE COMPOSITION BY VOLUME

RES Job Number: RES 42846-1  
 Client: Kaiser-Hill Company, LLC  
 Client Project: 97P1585/GCO40000,  
 Date Samples Received: April 26, 1997  
 Analysis Type: PLM Short Report, Bulk  
 Turnaround: 3-5 Day

Note: The US EPA requires use of stratified analysis for NESHAP and AHERA compliance. Composite results only apply for specific exceptions.

Client Sample Number	Lab ID Number	Layer	Physical Description	Portion of Total Sample (%)	ASBESTOS CONTENT		Non-Asbestos Fibrous Components (%)								Non-Fibrous Components (%)
					BY LAYER		C	G	S	H	W	T	O		
					Mineral	Visual Estimate (%)	E	L	Y	A	O	A	T		
							L	A	N	I	L	L	H		
							L	S	T	R	L	C	E		
							S	H					R		
T891A-97-04-14-64-08	EM 286118	A	White paint	5		ND	0	0	0	0	0	0	0		100
		B	Tan fibrous material	20		ND	97	0	0	0	0	0	0		3
		C	White plaster	75		ND	0	7	0	0	0	0	0		93
T891A-97-04-14-64-09	EM 286118	A	White paint	5		ND	0	0	0	0	0	0	0		100
		B	Tan fibrous material	15		ND	97	0	0	0	0	0	0		3
		C	White plaster	80		ND	0	7	0	0	0	0	0		93
T891A-97-04-14-64-10	EM 286120	A	Silver foil w/tan fibrous material tan resin & white fibrous woven material	40		ND	80	10	0	0	0	0	0		30
		B	Gold fibrous resinous material w/pink fibrous material	60		ND	0	80	0	0	0	0	0		20
T891A-97-04-14-64-11	EM 286121	A	White paint	10		ND	0	0	0	0	0	0	0		100
		B	Tan fibrous material	35		ND	87	0	0	0	0	0	0		3
		C	White plaster	55		ND	0	7	0	0	0	0	0		93
T891A-97-04-14-64-12	EM 286122	A	Gold fibrous resinous material	15		ND	0	80	0	0	0	0	0		20
		B	Silver foil w/tan fibrous material tan resin & white fibrous woven material	85		ND	40	20	0	0	0	0	0		40

ND = None Detected  
 TR = Trace

CELL = Cellulose  
 Mat = Material  
 ORG = Organic  
 Trem-Act = Tremolite-Actinolite

WOLL = Wollastonite  
 BRUC = Brucite

GYP = Gypsum  
 SYNTH = Synthetic

Data QA

04/28/97 TUE 13:48 FAX 503 693 9180

KRS. ENV. SERV.

49003

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**RESERVOIRS ENVIRONMENTAL SERVICES, INC.**  
 NVLAP Accredited Laboratory #1898

Page 3 of 3

**TABLE I. PLM BULK ANALYSIS, PERCENTAGE COMPOSITION BY VOLUME**

RES Job Number: RES 42846-1  
 Client: Kaiser-Hill Company, LLC  
 Client Project: 97P1586/GC040000,  
 Date Samples Received: April 25, 1997  
 Analysis Type: PLM Short Report, Bulk  
 Turnaround: 3-5 Day

Note: The US EPA requires use of stratified analysis for NESHAP and AHERA compliance. Composite results only apply for specific exceptions.

Client Sample Number	Lab ID Number	Layer	Physical Description	Portion of Total Sample (%)	ASBESTOS CONTENT		Non-Asbestos Fibrous Components (%)								Non-Fibrous Components (%)
					BY LAYER		C	G	S	H	W	T	O		
					Mineral	Visual Estimate (%)	E	L	Y	A	O	A	T		
							L	A	N	I	L	L	H		
							L	S	T	R	L	C	E		
							S	H					R		
T891A-97-04-14-64-13	EM 286123	A	Gold fibrous resinous material	15		ND	0	80	0	0	0	0	0		20
		B	Silver foil w/tan fibrous material tan resin & white fibrous woven material	85		ND	50	15	0	0	0	0	0		35

ND = None Detected  
 TR = Trace

CELL = Cellulose  
 Mat = Material  
 ORG = Organic  
 Trem-Act = Tremolite-Actinolite

WOLL = Wollastonite  
 BRUC = Brucite

GYP = Gypsum  
 SYNTH = Synthetic

Data QA

04/29/97 TUE 13:48 FAX 303 863 8186

RES. ENV. SERV.

70

04004

# RESERVOIRS ENVIRONMENTAL SERVICES, INC.

NVLAP Accredited Laboratory #1896

Page 1 of 2

TABLE I. PLM BULK ANALYSIS, PERCENTAGE COMPOSITION BY VOLUME

RES Job Number: RES 44792-1  
 Client: Kaiser-Hill Company, LLC  
 Client Project: GC0400-00/97J2201  
 Date Samples Received: July 18, 1997  
 Analysis Type: PLM Short Report, Bulk  
 Turnaround: 3-5 Day

Note: The US EPA requires use of stratified analysis for NESHAP and AHERA compliance. Composite results only apply for specific exceptions.

Client Sample Number	Lab ID Number	L a y e r	Physical Description	Portion of Total Sample (%)	ASBESTOS CONTENT		Non-Asbestos Fibrous Components (%)						Non-Fibrous Components (%)
					BY LAYER		C	G	S	H	W	T	
					Mineral	Visual Estimate (%)	E L L S	L A N S	Y A N T H	A I R	O L C	A	
T891L-9707177-MS-004	EM 300430	A	Brown resin	2		ND	B	2	TR	0	0	0	90
		B	Tan tile	98		ND	TR	0	0	0	0	0	100
T891L-9707177-MS-005	EM 300431	A	Brown resin	2		ND	6	TR	TR	0	0	0	94
		B	Tan tile	98		ND	TR	0	0	0	0	0	100
T891L-9707177-MS-006	EM 300432	A	Brown & gray fibrous material w/ white paint	15		ND	98	0	0	0	0	0	2
		B	Brown wood w/brown resinous material	30		ND	70	0	0	0	0	0	30
		C	White fibrous plaster	55		ND	3	10	0	0	0	0	87
T891N-9707177-MS-004	EM 300433	A	White paint	3		ND	1	0	0	0	0	0	99
		B	Brown & tan fibrous material	12		ND	98	0	0	0	0	0	2
		C	White fibrous plaster	85		ND	3	12	0	0	0	0	85
T891N-9707177-MS-005	EM 300434	A	Brown resin	2		ND	5	0	0	0	0	0	96
		B	Tan tile	98		ND	0	0	0	0	0	0	100
T891N-9707177-MS-006	EM 300435	A	Tan tile	100		ND	1	0	0	0	0	0	99
T891n-9707177-MS-007	EM 300436	A	Light brown wood w/brown resin	100		ND	83	0	0	0	0	0	17
T891A-9707177-MS-001	EM 300437	A	Brown fibrous material w/black resinous material	100		ND	92	0	0	0	0	0	8

ND = None Detected

CELL = Cellulose

ORG = Organic

WOLL = Wollastonite

GYP = Gypsum

Analyst: GB

TR = Trace, < 1% Visual Estimate

Trem-Act = Tremolite-Actinolite

BRUC = Brucite

SYNTH = Synthetic

Date QA

KRS. ENV. SERV.

49003

07/24/97 THU 10:18 AM 303 063 8185

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**RESERVOIRS ENVIRONMENTAL SERVICES, INC.**  
 NVLAP Accredited Laboratory #1896

Page 2 of 2

**TABLE I. PLM BULK ANALYSIS, PERCENTAGE COMPOSITION BY VOLUME**

RES Job Number: RES 44792-1  
 Client: Kalsen-Hill Company, LLC  
 Client Project: GC0400-00/97J2201  
 Date Samples Received: July 18, 1997  
 Analysis Type: PLM Short Report, Bulk  
 Turnaround: 3-5 Day

Note: The US EPA requires use of stratified analysis for NESHAP and AHERA compliance. Composite results only apply for specific exceptions.

Client Sample Number	Lab ID Number	Layer	Physical Description	Portion of Total Sample (%)	ASBESTOS CONTENT		Non-Asbestos Fibrous Components (%)						Non-Fibrous Components (%)				
					BY LAYER		C E L L S	G L A S S	S Y N T H	H A I R	W O O L	T A R					
					Mineral	Visual Estimate (%)											
T891A-9707177-MS-002 EM 300438					A	Black fibrous tar w/black tar & white rock fragments	100		ND	40	2	0	0	0	0	58	
T891M-9707177-MS-004 EM 300439					A	Brown & gold resin	2		ND	10	0	0	0	0	0	0	90
					B	White tile	98		ND	TR	0	0	0	0	0	0	100
T891M-9707177-MS-005 EM 300440					A	White paint	3		ND	1	0	0	0	0	0	0	99
					B	Brown & tan fibrous material	7		ND	98	0	0	0	0	0	0	2
					C	White fibrous plaster	90		ND	3	10	0	0	0	0	0	87

ND = None Detected

CELL = Cellulose

ORG = Organic

WOLL = Wollastonite

GYP = Gypsum

TR = Trace, < 1% Visual Estimate

Trem-Act = Tremolite-Actinolite

BRUC = Brucite

SYNTH = Synthetic

Data QA

07/24/97 THU 16:17 FAX 303 863 9186

RES. ENV. SERV.

004

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## RESERVOIRS ENVIRONMENTAL SERVICES, INC.

NVLAP Accredited Laboratory #1896

TABLE I. PLM BULK ANALYSIS, PERCENTAGE COMPOSITION BY VOLUME

RES Job Number: RES 45059-1  
 Client: Kaiser-Hill Company, LLC  
 Client Project: GG0400/97J2204  
 Date Samples Received: July 30, 1997  
 Analysis Type: PLM Short Report, Bulk  
 Turnaround: 2 Hour

Note: The US EPA requires use of stratified analysis for NESHAP and  
 AHERA compliance. Composite results only apply for specific exceptions.

Client Sample Number	Lab ID Number	L a y e r	Physical Description	Portion of Total Sample (%)	ASBESTOS CONTENT		Non-Asbestos Fibrous Components (%)								Non-Fibrous Components (%)
					BY LAYER		C	G	S	H	W	T	O		
					Mineral	Visual Estimate (%)	E	L	A	N	I	L	L	H	
							L	S	T	R	L	C	E	R	
T891L-970730-MS-007	EM 302054	A	Brown resin	3		ND	TR	0	0	0	0	0	0	0	100
		B	Tan tile	97		ND	O	0	0	0	0	0	0	0	100

ND = None Detected

CELL = Cellulose

ORG = Organic

WOLL = Wollastonite

GYP = Gypsum

Analyst: PFK

TR = Trace, &lt; 1% Visual Estimate

Trem-Act = Tremolite-Actinolite

BRUC = Brucite

SYNTH = Synthetic

Data QA

RES. ENV. SERV.

**Attachment 3.1**  
**Sample Results/Quality Control Tables**

## Cover Page

Jul-25-97

Ms. Ginny Whiteford  
Accu-Labs Research, Inc.  
4663 Table Mountain Drive  
Golden, CO 80403-1650

Laboratory Project No.: 87071810  
Client: Kaleer Hill  
PO# / Release #: GC-0400-00  
Site Sample #:   
Seal #: 87J2187  
Requestor: M. Schluterbusch  
Subcontract #:

Dear Ms. Whiteford,

Schuller International, Inc., Mountain Technical Center (MTC) has performed the following analytical services as requested. The results are calculated based upon the information supplied on the submission form. All laboratory data has been filed and are available upon request. The industrial hygiene laboratory at MTC has been fully accredited in all aspects by the American Industrial Hygiene Association (AIHA) since 1976. If you have any questions, please call (303) 978-2584

### Scope of Work

Analysis	# of Samples	Matrix	Method	Reporting Limit	OSHA Standard (TWA)
Arsenic	12	Bulk	OSHA ID-126	0.1 µg	
Chromium				0.1 µg	
Lead				0.1 µg	
Zinc				0.1 µg	

I certify that this data package is in compliance with the terms and conditions of the subcontract, both technically and for completeness, other than the conditions detailed above. Release of the data contained in this hard data package has been authorized by the Laboratory Manager or the Manager's designee, as verified by the following signature.

\_\_\_\_\_  
Scott A. Steiner  
Industrial Hygiene Laboratory Manager

\_\_\_\_\_  
Date

JUL-28-97 TUE 8:37

BLDG 881 ROOM 212

FAX NO. 303 966 3400

P.05

JUL 25 '97 08:43 PM FILE IN LHM

## JOHNS MANVILLE TECHNICAL CENTER (JMTC)

JUL-25-97

TABLE I: Sample Results

Client Sample No.	Laboratory Sample No.	Analyte	Method	Matrix	Reporting Limit	Total	%	mg/kg	Al Vol. / Time	Al Concentration
T891A-970717-MS-001	813641	Arsenic Chromium Lead Zinc	OSHA ID-125	Bulk	0.1 µg 0.1 µg 0.1 µg 0.1 µg	0.1 µg 0.1 µg 0.1 µg 0.1 µg	0.018 0.014 0.012 ND	180 140 120 ND	ND	ND
T891A-970717-MS-002	813642	Arsenic Chromium Lead Zinc	OSHA ID-125	Bulk	0.1 µg 0.1 µg 0.1 µg 0.1 µg	0.1 µg 0.1 µg 0.1 µg 0.1 µg	0.010 0.025 0.021 0.251	100 250 210 2510	ND	ND
T891A-970717-MS-003	813643	Arsenic Chromium Lead Zinc	OSHA ID-125	Bulk	0.1 µg 0.1 µg 0.1 µg 0.1 µg	0.1 µg 0.1 µg 0.1 µg 0.1 µg	0.278 ND 0.151 0.251	2780 ND 1510 2510	ND	ND
T891N-970717-MS-001	813644	Arsenic Chromium Lead Zinc	OSHA ID-125	Bulk	0.1 µg 0.1 µg 0.1 µg 0.1 µg	0.1 µg 0.1 µg 0.1 µg 0.1 µg	ND ND ND ND	ND ND ND ND	ND	ND
T891N-970717-MS-002	813645	Arsenic Chromium Lead Zinc	OSHA ID-125	Bulk	0.1 µg 0.1 µg 0.1 µg 0.1 µg	0.1 µg 0.1 µg 0.1 µg 0.1 µg	0.018 0.042 0.014 ND	180 420 140 ND	ND	ND
T891N-970717-MS-003	813646	Arsenic Chromium Lead Zinc	OSHA ID-125	Bulk	0.1 µg 0.1 µg 0.1 µg 0.1 µg	0.1 µg 0.1 µg 0.1 µg 0.1 µg	0.001 0.003 0.003 0.003	10 30 30 80	ND	ND

Laboratory Project No.: 87071810  
 Client: Kaiser Hill  
 PO#/Release #: GC-0400-00  
 Site Sample #: 87J2197  
 Seal #: M. Schlatterbusch  
 Requestor:

JOHNS MANVILLE TECHNICAL CENTER (JMTG)

Jul-25-97

Laboratory Project No.: 97071810  
Client: Kaiser H&B  
PO#/Release #: GC-0400-00  
Site Sample #: 97J2197  
Seal #: M. Schlatterbusch  
Requestor:

TABLE I: Sample Results

Client Sample No.	Laboratory Sample No.	Analysis	Method	Matrix	Reporting Limit	Total	%	mg/kg (ppm)	Air Vol. / Time	Air Concentration
T881L-970717-MS-001	S13847	Arsenic Chromium Lead Zinc	OSHA ID-125	Bulk	0.1 µg 0.1 µg 0.1 µg 0.1 µg		ND 0.016 0.005 0.006	ND 160 50 80		
T881L-970717-MS-002	S13848	Arsenic Chromium Lead Zinc	OSHA ID-125	Bulk	0.1 µg 0.1 µg 0.1 µg 0.1 µg		ND 0.023 0.020 0.010	ND 230 200 100		
T881L-970717-MS-003	S13848	Arsenic Chromium Lead Zinc	OSHA ID-125	Bulk	0.1 µg 0.1 µg 0.1 µg 0.1 µg		ND ND ND 0.028	ND ND ND 280		
T881M-970717-MS-001	S13650	Arsenic Chromium Lead Zinc	OSHA ID-125	Bulk	0.1 µg 0.1 µg 0.1 µg 0.1 µg		ND 0.004 0.012 0.003	ND 40 120 30		
T881M-970717-MS-002	S13651	Arsenic Chromium Lead Zinc	OSHA ID-125	Bulk	0.1 µg 0.1 µg 0.1 µg 0.1 µg		ND 0.003 0.010 0.001	ND 30 100 10		
T881M-970717-MS-003	S13852	Arsenic Chromium Lead Zinc	OSHA ID-125	Bulk	0.1 µg 0.1 µg 0.1 µg 0.1 µg		ND ND 0.001 0.020	ND ND 10 200		

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# SCHULLER INTERNATIONAL, INC. / MOUNTAIN TECHNICAL CENTER (MTC)

Jul-25-97

Laboratory Project No.: 97071810  
 Client: Kaiser Hill  
 PO# / Release #: GC-0400-00  
 Site Sample #: 97J2197  
 Seal #: M. Schluterbusch  
 Requestor:

TABLE II: Quality Control

QC No.	Analyte	Method	Matrix	Reporting Limit	Amount Spiked	Amount Recovered	Percent Recovery
Digestion Blank	Arsenic	OSHA ID-125	Bulk	0.1 µg	N/A	< 0.1 µg	
	Chromium			0.1 µg	N/A	< 0.1 µg	
	Lead			0.1 µg	N/A	< 0.1 µg	
	Zinc			0.1 µg	N/A	< 0.1 µg	
Blank Spike	Arsenic	OSHA ID-125	Bulk	0.1 µg	0.166 mg/L	0.155 mg/L	93.4%
	Chromium			0.1 µg	0.166 mg/L	0.147 mg/L	88.6%
	Lead			0.1 µg	0.166 mg/L	0.144 mg/L	86.7%
	Zinc			0.1 µg	0.166 mg/L	0.149 mg/L	89.8%
Q7-596	Zinc	OSHA ID-125	Bulk	0.1 µg	0.202%	0.203%	99.5%

Analyst: \_\_\_\_\_

IHQ: \_\_\_\_\_

AIHA Accreditation No. 056

78

JUL-29-97 TUE 8:37  
 JUL 27 08:45 PM '97  
 BLDG 881 ROOM 212

FAX NO. 303 986 3400

P. 03

**Cover Page**

Post-it* Fax Note 7871		Date 8/5	# of pages 4
To Mike Schluterbusch		From Scott Steiner	
Co./Dept.		Co.	
Phone #		Phone # 978-2584	
Fax # 966-6538		Fax #	

Jul-31-97

Ms. Ginny Whiteford  
 Accu-Labs Research, Inc.  
 4663 Table Mountain Drive  
 Golden, CO 80403-1650

Laboratory Project No.: 97073006  
 Client: Kaiser Hill  
 PO# / Release #: 98915234  
 Site Sample #:  
 Seal #: 9792197  
 Requestor: M. Schluterbusch  
 Subcontract #:

Dear Ms. Whiteford,

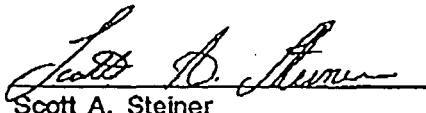
Schuller International, Inc., Mountain Technical Center (MTC) has performed the following analytical services as requested. The results are calculated based upon the information supplied on the submission form. All laboratory data has been filed and are available upon request.

The industrial hygiene laboratory at MTC has been fully accredited in all aspects by the American Industrial Hygiene Association (AIHA) since 1976. If you have any questions, please call (303) 978-2584

**Scope of Work:**

Analysis	# of Samples	Matrix	Method	Reporting Limit	OSHA Standard (TWA)
Arsenic	1	Bulk	OSHA ID-125	0.1 µg	
Cadmium				0.1 µg	
Chromium				0.1 µg	
Lead				0.1 µg	
Zinc				0.1 µg	

I certify that this data package is in compliance with the terms and conditions of the subcontract, both technically and for completeness, other than the conditions detailed above. Release of the data contained in this hard data package has been authorized by the Laboratory Manager or the Manager's designee, as verified by the following signature.



Scott A. Steiner

Industrial Hygiene Laboratory Manager

7/31/97

Date

# JOHNS MANVILLE TECHNICAL CENTER (JMTC)

Jul-31-97

Laboratory Project No.: 97073006  
 Client: Kaiser Hill  
 PO#/Release #: EM24-94-75  
 Site Sample #:   
 Seal #: 9792197  
 Requestor: M. Schluterbusch

TABLE II: Quality Control

QC No.	Analyte	Method	Matrix	Reporting Limit	Amount Spiked	Amount Recovered	Percent Recovery
Digestion Blank	Arsenic	OSHA ID-125	Bulk	0.1 µg	N/A	< 0.1 µg	
	Cadmium			0.1 µg	N/A	< 0.1 µg	
	Chromium			0.1 µg	N/A	< 0.1 µg	
	Lead			0.1 µg	N/A	< 0.1 µg	
	Zinc			0.1 µg	N/A	< 0.1 µg	
Blank Spike	Arsenic	OSHA ID-125	Bulk	0.1 µg	0.166 mg/L	0.169 mg/L	101.8%
	Cadmium			0.1 µg	0.166 mg/L	0.177 mg/L	106.6%
	Chromium			0.1 µg	0.166 mg/L	0.174 mg/L	104.8%
	Lead			0.1 µg	0.166 mg/L	0.170 mg/L	102.4%
	Zinc			0.1 µg	0.166 mg/L	0.177 mg/L	106.6%

Analyst: Anthony Carr

Quality Assurance: Dennis Murray

AIHA Accreditation No. 056

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# JOHNS MANVILLE TECHNICAL CENTER (JMTC)

Jul-31-97

Laboratory Project No.: 97073006  
 Client: Kaiser Hill  
 PO#/Release #: 98315234  
 Site Sample #:   
 Seal #: 9792197  
 Requestor: M. Schluterbusch

TABLE I: Sample Results

Client Sample No.	Laboratory Sample No.	Analysis	Method	Matrix	Reporting Limit	Total	%	mg/kg (ppm)	Air Vol. / Time	Air Concentration
T891L-970730-008	S14024	Arsenic	OSHA ID-125	Bulk	0.1 µg		ND	ND		
		Cadmium			0.1 µg		ND	ND		
		Chromium			0.1 µg		0.024	240		
		Lead			0.1 µg		0.019	190		
		Zinc			0.1 µg		0.008	80		

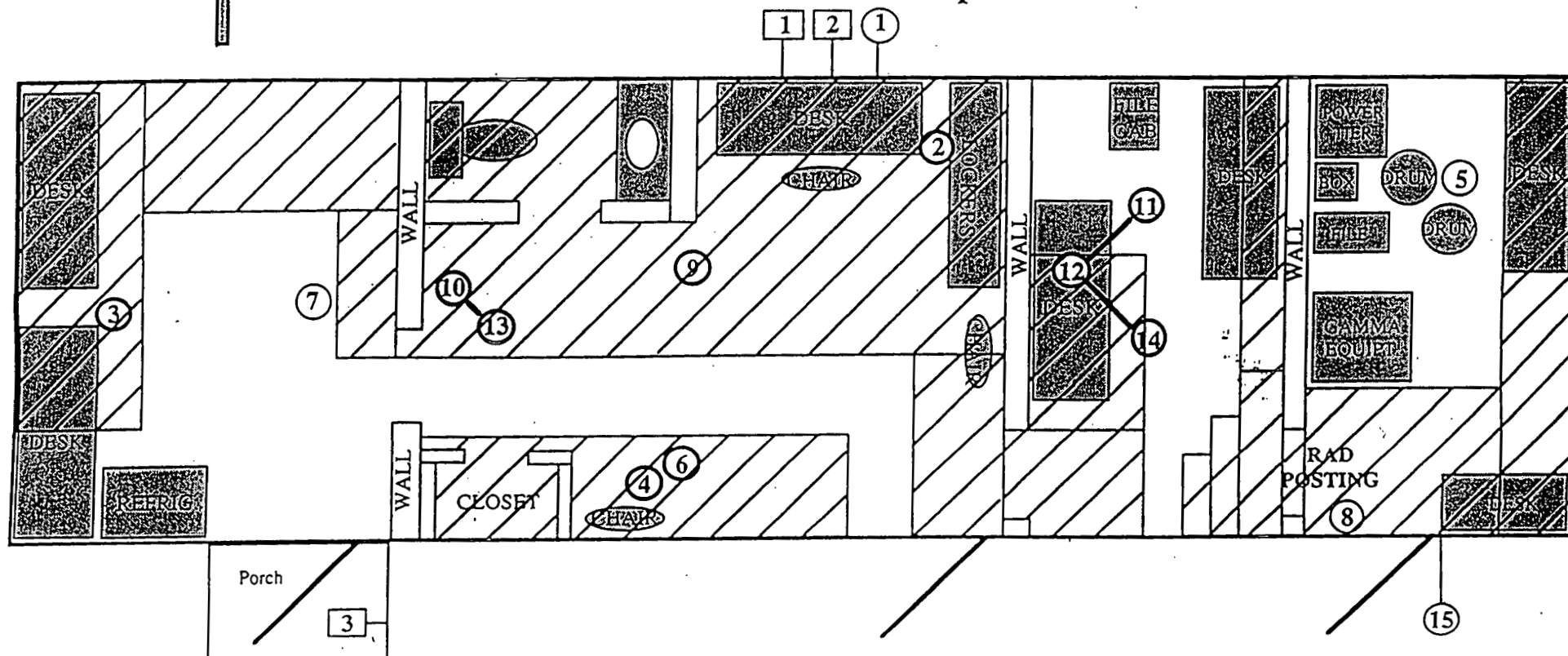
ND not detected

81

**Attachment 3.2**  
**Asbestos and Lead Sample Locations for**  
**T891A, T891L, T891M and T891N**



# T891 A - Asbestos and Lead Sample Locations



## KEY

○ = Asbestos Sample Locations (Asbestos Content)

▨ = Location of tan tile/white streaks

① T891A-970717-MS-004: Tan paper in underside of trailer (neg)

② T891A-970414-64-01: 12" Tan tile/white streaks (5%)

③ T891A-970414-64-02: 12" Tan tile/white streaks (3%)

④ T891A-970414-64-03: 12" Tan tile/white streaks (5%)

⑤ T891A-970414-64-04: 12" Tan/beige floor tile (neg)

□ = Lead Sample Locations (Lead Content)

1 T891A-970717-MS-001: White paint on metal skirting (120 ppm)

2 T891A-970717-MS-002: Cream paint on metal siding (210 ppm)

3 T891A-970717-MS-003: White paint on wood porch (1510 ppm)

CONTINUED ON NEXT PAGE

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## T891 A - Asbestos and Lead Sample Locations Continued

### KEY

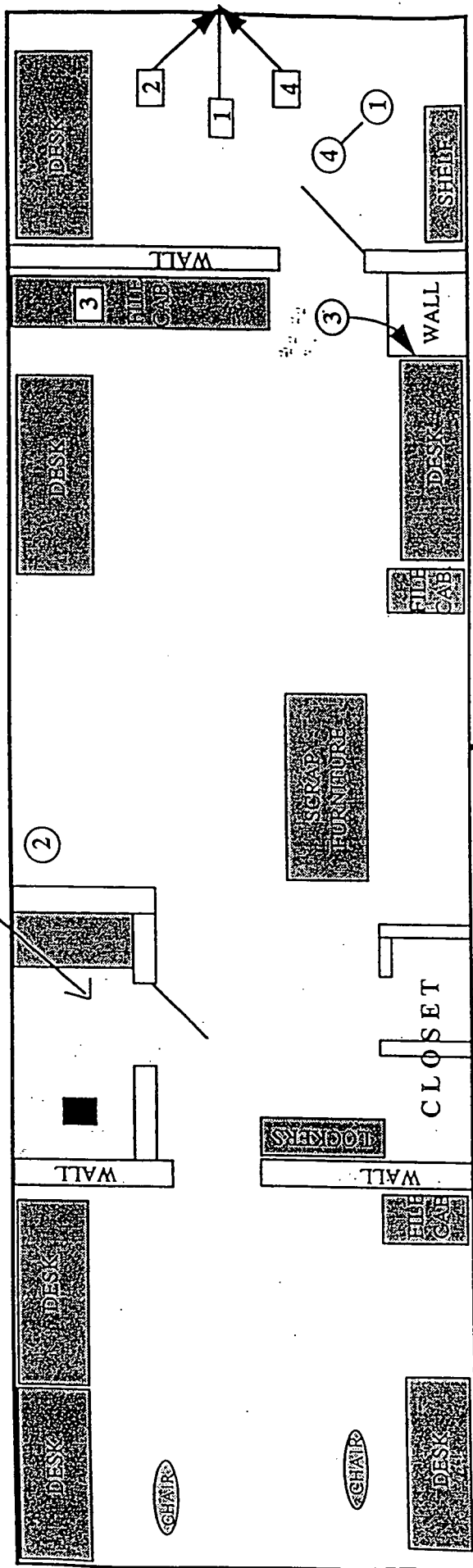
- 
- = Asbestos Sample Location (Asbestos Content)... Continued
- ⑥ T891A-970414-64-05: 12" Tan/beige floor tile (neg)
- ⑦ T891A-970414-64-06: 12" Tan/beige floor tile (neg)
- ⑧ T891A-970414-64-07: 12" Tan floor tile (neg)
- ⑨ T891A-970414-64-08: Ceiling drywall (neg)
- ⑩ T891A-970414-64-09: Ceiling drywall (neg)
- ⑪ T891A-970414-64-10: Ceiling drywall/insulation (neg)
- ⑫ T891A-970414-64-11: Ceiling drywall (neg)
- ⑬ T891A-970414-64-12: Ceiling drywall/insulation (neg)
- ⑭ T891A-970414-64-13: Ceiling drywall/insulation (neg)
- ⑮ T891A-970717-MS-005: Roof tar. (neg)

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N ↑

# T891 L - Asbestos and Lead Sample Locations

BATHROOM CONTAINS NO SINK OR TOILET!



## KEY

○ = Asbestos Sample Location (Asbestos Content)

- 1 T891L-970717-MS-004: 12" floor tile light brown mottle (neg)
- 2 T891L-970717-MS-005: 12" floor tile beige mottle (neg)
- 3 T891L-970717-MS-006: Textured drywall furnace enclosed: (neg)
- 4 T891L-970717-MS-007: 12" floor tile light brown mottle (neg)

□ = Lead Sample Location (Lead Content)

- 1 T891L-970717-MS-001: White paint on metal skirting (80 ppm)
- 2 T891L-970717-MS-002: Cream paint on metal siding (100 ppm)
- 3 T891L-970717-MS-003: White paint on drywall ceiling (280 ppm)
- 4 T891L-970717-MS-008: Cream paint on metal siding (90 ppm)

**Z** 



= Lead Sample Location (Asbestos Content)

T89|M-970717-MS-001: White paint on metal skirting (30 ppm)

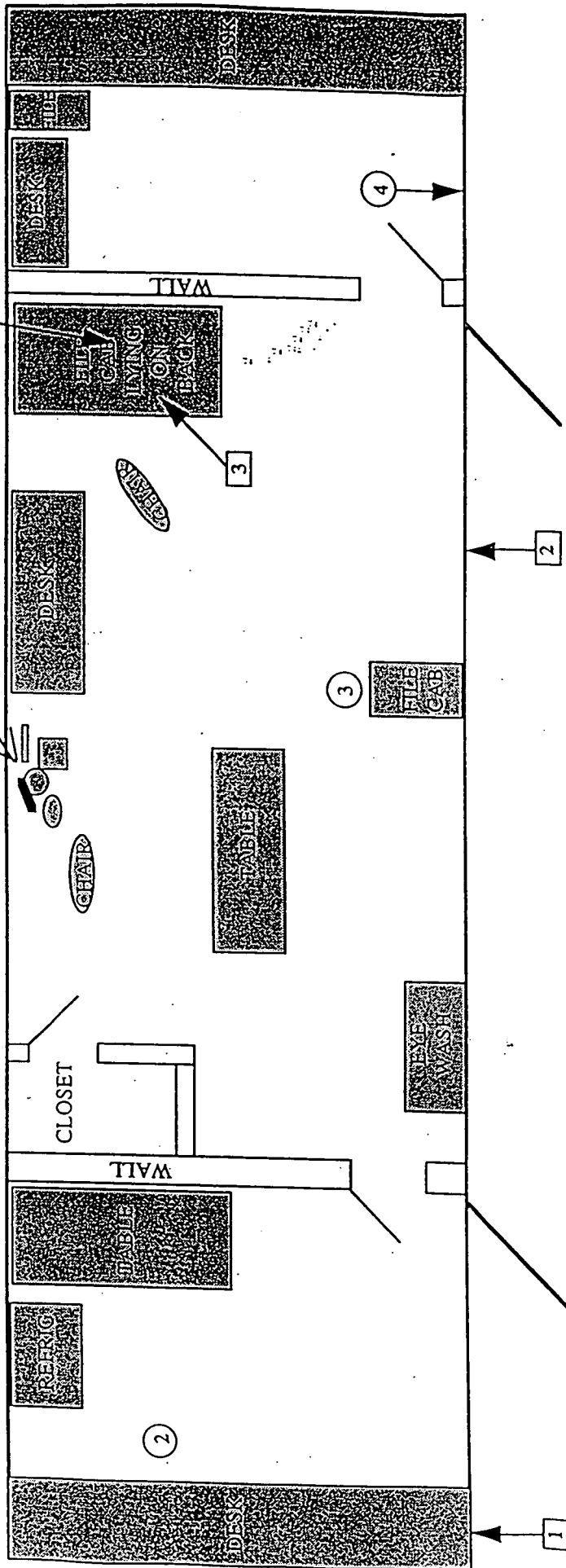
**T891M-970717-MS-002: Cream paint on metal, siding (10 ppm)**

T891M-970717-MS-003: White textured paint on drywall (200 ppm)

# T891 N - Asbestos and Lead Sample Locations

N

MISCELLANEOUS GARBAGE



## KEY

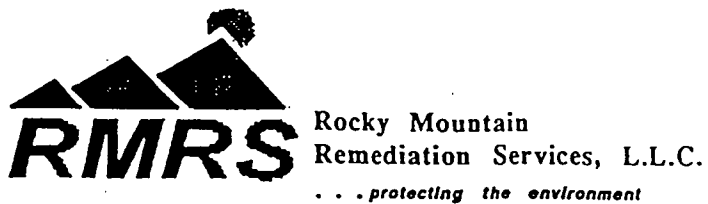
- |   |  |   |  |
|---|--|---|--|
| ○ | = Asbestos Sample Locations (Asbestos Content)               | □ | = Lead Sample Locations (Lead Content)                     |
| ① | T891N-970717-MS-004: Thin white textured ceiling panel (neg) | ① | T891N-970717-MS-001: White paint on vinyl skirting (neg)   |
| ② | T891N-970717-MS-005: 12" floor tile brown mottle (neg)       | ② | T891N-970717-MS-002: White paint on metal siding (140 ppm) |
| ③ | T891N-970717-MS-006: 12" floor tile light brown mottle (neg) | ③ | T891N-970717-MS-003: White paint on ceiling panel (30 ppm) |
| ④ | T891N-970717-MS-007: Brown adhesive behind paneling (neg)    |   |  |

**ATTACHMENT 7.3**

**Asbestos and Lead Sampling and Analysis Plan for the T891 Trailers**

**July 1997**





RF/RMRS-97-035

## **Asbestos and Lead Sampling and Analysis Plan For The T891 Trailers**

**JULY 1997**

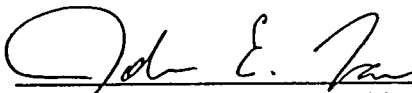
ASBESTOS AND LEAD SAMPLING AND ANALYSIS PLAN

FOR THE T891 TRAILERS

REVISION 0

JUNE 1997

This Sampling and Analysis Plan has been reviewed and approved by:

  
John Law, Manager, Water Management and Treatment

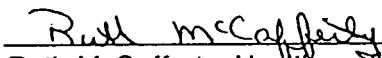
7/14/97

Date

  
Ty Vess, Project Manager

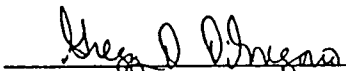
7-15-97

Date

  
Ruth McCafferty, Health and Safety Representative

7/14/97

Date

  
Greg DiGregorio, Quality Assurance

7/14/97

Date

This Sampling and Analysis Plan was prepared by:

  
Michael N. Schluterbusch, Certified Building Inspector

7/16/97

Date

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## ACRONYMS

ACM	Asbestos containing material
AHERA	Asbestos Hazardous Emergency Response Act
AS	Absorption spectroscopy
CCR	Colorado Code of Regulations
CFR	Code of Federal Regulations
CPS	Coupled plasma spectroscopy
DQO	Data quality objectives
PEP	Project Execution Plan
EPA	Environmental Protection Agency
Ft <sup>2</sup>	Square Feet
GF	Graphite furnace
HUD	Housing and Urban Development
IDL	Instrument detection limits
NVLAP	National Voluntary Laboratory Accreditation Program
OSHA	Occupational Safety and Health Administration
PLM	Polarized light microscopy
PPE	Personal Protective Equipment
PPM	Parts per million
RCT	Radiation Control Technician
RFETS	Rocky Flats Environmental Technology Site
RTG	Resource Technology Group, Inc.

## **1.0 INTRODUCTION**

### **1.1 PURPOSE**

The purpose of this project is to remove four office trailers and one semi-trailer from the Rocky Flats Environmental Technology Site (RFETS). The work is to be implemented and completed within the FY97 budget cycle.

Trailers T891A, L, M and N are portable office trailers, each measuring 10 feet wide by 60 feet in length. Construction materials and methods for these trailers are similar to that found in mobile homes. Trailer T900E is a semi trailer constructed of all new materials. A letter from the Resource Technology Group, Inc. (RTG) stated that no asbestos or lead containing materials were used, exempting this unit from further testing and analysis. For details regarding building descriptions and histories, refer to the Project Execution Plan (PEP).

### **1.2 SCOPE**

The scope of work includes the completion of all activities required to remove five trailers in the T891 Cluster. This includes planning and engineering, facility assessments, regulatory activities, characterization of building contaminants, and site preparation. The scope also includes the procurement activities to identify and put subcontract(s) in place to perform utilities disconnections and for transportation of the trailers.

### **1.3 PROTOCOL**

Contained herein is a preliminary protocol for asbestos and lead sampling for the T891 Trailer Cluster. Due to the analytical methodology, other metals such as arsenic, chromium, cadmium and zinc may be discovered and documented. This approach will ensure that the process will be in compliance with applicable Federal and State regulations.

The survey practices outlined are specifically designed to provide occupational hazard assessment information in support of activities to facilitate removal of Trailers T891A, T891L, T891M, T891N And T900E from the site. However, the information may be used to provide support for a comprehensive operations and maintenance program during normal building activities covered under the site Integrated Work Control Program such as routine or scheduled maintenance, repair or remodeling until such time as the trailers are evacuated and moved.

All decisions and processes are checked for veracity through the use of the site data quality objectives process guidelines (EPA QA/G-4).

## **2.0 METHODOLOGY**

The first step in sampling for asbestos and lead in a building is to research the building records such as blueprints and specifications for documentation of the use of these materials in construction or remodeling efforts. Dates of construction are considered in this process.

The second step in this process is to physically tour the building, entering every accessible area and room, looking for suspect (or affected) materials that may indicate through historical data or based on the inspector's experience, the presence of asbestos or lead. A suspect list is generated, along with estimated quantities.

## 2.1 INSPECTION RATIONALE

Settled dust sampling for lead and asbestos is used as an optional aid to assessment of industrial hygiene issues such as work practices and engineering controls and Personal Protective Equipment (PPE) that would be used in the decommissioning, removal or demolition of structures.

Bulk asbestos and/or paint chip sampling for lead is used as an aid to assessment of industrial hygiene issues such as work practices and engineering controls and PPE.

Asbestos and lead sampling is a destructive method that may release a small quantity of dust. Although material and paint chip samples are to be collected from inconspicuous areas, proper safety precautions must be taken to prevent the spread of suspect materials.

When inspecting for asbestos, non-suspect (or unaffected) materials are those traditionally made of wood, glass or metal. However, the inspector will suspect the adhesives applied to secure non-suspect materials to the substrate. Suspect, or affected materials are separated into three general categories: thermal systems insulation, surfacing materials, and miscellaneous materials.

When inspecting for lead, there are components where it has been identified through historical research of building records or by visual inspection techniques that lead paint and/or the aforementioned metals either in paint, chips, fragments, dust or material forms have been positively identified as existing. The following is a list of materials that may be coated with lead containing paint, or may have been constructed with lead.

- Wall and ceiling paint
- Paint on components (i.e. guard rails, tanks, machine guards)
- Gloveboxes and associated shielding equipment
- Piping
- Roof jacks
- Mounting plates and bracket bars
- Stationary shields
- Lead fill in walls
- Plaster additives

Non-suspect areas are those areas where there is a high level of certainty that lead and/or the aforementioned metals do not exist due to the absence of either in paint, chips, dust, fragments or material forms.

Before any removal, decommissioning or destruct activities are allowed, suspect and non suspect areas will be evaluated to determine sampling criteria needs. See Table 2-1 for evaluations on this project.

ASBESTOS AND LEAD  
SAMPLING PLAN FOR THE  
T891 TRAILERS

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TABLE 2-1 LEAD AND ASBESTOS SURVEY RESULTS/SAMPLING REQUIREMENTS

TRAILER	LEAD SAMPLES	ASBESTOS	NOTES
T891A	Exterior: (1 each) 1. Sheet metal 2. Skirting 3. Base trim 4. Roof trim	Exterior: (1 sample each) 1. Pipe insulation 2. Roof tar	PU&D# 00088246
	Interior: 1. Ceiling panels (1 sample)	Interior: 1. Floor tile (6 samples) 2. Ceiling panel (3 samples) 3. Ceiling insulation (3 samples)	From previously acquired samples.
T891L	Exterior: (1 sample) 1. Sheet metal 2. Skirting 3. Base trim	Exterior: 1. Roofing tar (1 sample)	Elder S# C18357; Built 1981: PU&D#085344- 00
	Interior: (1 sample) 1. Roof panels	Interior: (1 sample each) 1. Floor tile 2. Pipe insulation 3. Ceiling panel	
T891M	Exterior: (1 sample) 1. Sheet Metal 2. Skirting 3. Base trim	Interior: 1. Roof tar (1 sample)	Elder S#PT9365; PU&D#0095343-00; Built 1981
	Interior: (1 sample) 1. Ceiling panels	Interior: (1 sample each) 1. Floor tile 2. Pipe insulation 3. Ceiling panel	
T891N	Exterior: (1 sample) 1. Sheet metal 2. Skirting 3. Base trim	Exterior: 1. Roof tar (1 sample)	PU&D# 00079991-00
	Interior: (1 sample) 1. Ceiling panels	Interior: (1 sample each) 1. Floor tile 2. Pipe insulation 3. Ceiling panel	
T900E	Interior & Exterior: Exempt	Interior & Exterior: Exempt	RTG letter dated 4/24/97 exempts from sampling
TOTALS	18 Samples	27 Samples	

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## 2.2 DATA COMPILATION

Data compilation will separate the materials into homogeneous areas within these general categories, which will lead to the number of samples necessary for regulatory compliance and statistical reliability of the outcome. Any homogeneous area may be assumed to contain asbestos or lead, negating the need for samples. Each building in the T891 cluster is sampled as a single entity.

## 3.0 SURVEY PROCEDURES

### 3.1 SAMPLE QUANTITY

The number of samples for asbestos for each homogeneous area is outlined in EPA 40CFR 763.86. Sample quantity is decided first by a material's physical condition of friability, then by its general category. Friable materials are those that are capable of being crumbled or reduced to powder by hand pressure. Thermal systems insulation, such as that found on pipes or ducts, friable or non-friable, requires a minimum of three samples per homogeneous area, one sample from patches less than six linear or square feet, and one from cementitious or "mudded" fittings. Each mechanical system, such as hot and cold domestic water, may have several homogeneous areas. Each will be sampled accordingly. Only friable surfacing materials, such as fire-proofing or ceiling texture, will have a nine section grid applied to a blueprint of the area and samples will be acquired from the center of randomly selected grids. If the homogeneous area of friable surfacing material is less than 1,000 ft<sup>2</sup>, three samples are needed; if between 1,000 and 5,000 ft<sup>2</sup>, five samples are needed; if the area is over 5,000 ft<sup>2</sup>, seven samples are needed. Miscellaneous materials, such as floor and ceiling tiles are sampled according to the inspector's discretion, as outlined in EPA 40CFR 763.86(c&d). For the purpose of this survey and based on the inspector's experience and discretion, a minimum of one sample of each suspected material in this category will be acquired.

Lead in paint sample quantity is outlined in the 1995 HUD Guidelines for the Evaluation and Control of Lead-Based Paint Hazards in Housing. Samples are determined by the colors present in the structure. Each color is sampled accordingly. Similar colors may also be sub-categorized into the type, such as oil-based, latex, gloss or semi-gloss for example. For each homogeneous area, one representative sample is acquired. Multiple layers of different colors are so noted if this can be determined visually. If not, the top layer is the determining color. The inspector also notes the substrate material.

### 3.2 SAMPLE LOCATION

Sample locations are selected randomly according to how each represents a homogeneous material. Since homogeneous areas are located throughout the building, the representation and number of samples is the driving factor rather than exact location of the sample in each room. Exact locations will be directly affected by the radiological concerns. In the absence of radiological surveys, a radiological control technician (RCT) will accompany the inspector. If a selected location is determined to exceed acceptable parameters, a second location will be selected. Should no radiologically acceptable location be found, a contaminated sample will be acquired and treated as a radiologically contaminated sample and cleared through Radiological Operations and Engineering.



## 4.0 SAMPLING

### 4.1 SETTLED DUST

Settled dust on horizontal surfaces will be sampled using a micro-vac technique that requires the use of a template that sequesters a 10 square inch pattern. The sampling tool is a low volume battery powered air sampling pump calibrated at 21 parts per million (ppm) with a 25 mm mce cassette attached. A two inch section of tygon tubing is attached to the upstream side of the cassette and facilitates pickup of all loose dust in the grid area. Each sample is documented as to location, the cassette is labeled with an identifying number, and sealed. The sample number is documented on the chain of custody form. The sample location may be photographed with a sample photo identification card in the focus area documenting the sample number and date, and orienting the viewer to the sample location with an arrow.

Each sample will be acquired with the intent of assuring the quality, representation, and safety of the process. The following steps will be performed for each sample acquired. Note that a RCT may be present as necessary to survey the area and location of the sample prior to proceeding.

### 4.2 ASBESTOS AND LEAD

Sampling for asbestos is performed using destructive techniques that requires acquiring a representative sample of the material down to the substrate. Each sample must contain a minimum of one cubic centimeter of material to facilitate analysis and archival processes.

Sampling for lead in paint requires that the paint chip sample be four square inches in size. Minimum weight is .2 grams. Sample size will be adjusted accordingly. The most common paint sampling method is to scrape paint directly off the substrate. The goal is to remove all layers of paint equally, but none of the substrate.

Sampling for lead and metals will be primarily performed utilizing a dust sampling technique and/or paint scraping techniques. Each sample will be acquired with the intent of assuring the quality, representation and safety of the process.

Bulk sampling procedures as outlined:

- The location of the sample is visually verified against written descriptions.
- A polyethylene drop cloth or plastic bag placed below the elevated sample areas.
- The immediate sample area is dampened with a mist of water and surfactant.
- A sampling tool, such as a hammer and chisel, razor knife, "wondermaker" or hole saw is selected and the sample is acquired, making sure to take a complete sample to the substrate. During this process, the immediate surface is misted as necessary.
- The acquired sample is placed in a sealable container, such as a plastic bag or vial.
- The container is sealed and a pre-numbered label is placed on the container. The sample number label is placed on chain of custody papers and the container is verified to be sealed.
- The sampling tool is thoroughly cleaned using mister and wipes as per AHERA.

- The sample area is patched as needed.
- The description and location is documented on a form, a sample label is placed on the form, and the location is documented on a blueprint.
- The sample container, drop cloth and immediate sample area is wet wiped and the drop cloth is carefully folded in to the center and placed in a sealable bag and the bag is sealed.
- In the case of routine maintenance areas, a pre-numbered label is placed at the sample location. With permission of the building manager, labels will be placed on all sample locations.
- The sample location is photographed with a sample photo identification card in the focus area documenting the sample number and date, and orienting the viewer to the location with an arrow. As there are no regulatory drivers in place for photographing lead in paint samples, this step is optional for this process.
- All used wipes, drop cloths, and PPE will be added to the appropriate waste stream.

## 5.0 LAB SUBMISSION ANALYSIS AND INSTRUMENTATION

All samples shall be submitted to a laboratory recognized by the EPA National Voluntary Laboratory Accreditation Program (NVLAP) for asbestos. Appropriate sample submittal forms shall be used. The field sample number shall appear on the field sampling form, the laboratory submittal form, and the container label. The name of the laboratory, the date the samples were sent to the lab, and all personnel handling the sample from the time of collection to the time of arrival at the laboratory shall be recorded on a chain of custody form.

### 5.1 ASBESTOS

The analytical methodology for bulk asbestos samples is polarized light microscopy (PLM) capable of 400x magnification augmented with dispersion staining. This method is outlined in the EPA 600/R-93/116 methods for the determination of asbestos in building materials.

Bulk samples of suspect materials are examined for homogeneity, layers and preliminary fiber identification using a stereoscope at 40x magnification. Layers are separated and mounted on slides. Refractive index oils are applied to the slide according to a morphology match. A light microscope equipped with two polarizing filters is used to observe seven specific optical characteristics of a sample at 400x magnification. The presence or absence of the characteristics determines the type of asbestos, or if not asbestos, the type of fiber present in the sample. The microscopist then visually estimates the percentage of asbestos or non-asbestos fibers in that layer. Each layer is reported separately. A layer or sample is determined to be an asbestos containing material if it contains more than one percent asbestos by this estimate. The limit of detection for PLM is less than five microns.

CCR 8 (Section iii.B.6.ii) mandates that the building manager must be given the option of accepting results from PLM analysis of samples with asbestos percentages from trace (less than 1%) to 10%, or requesting point counting analysis. If point counting is chosen, these results take precedence over the plm results. Point counting is a methodology that uses identical instrumentation, with the addition of a grid system on the stage. The analyst is required to look at

a minimum of 100 locations on eight different mounts, estimate the percentage of asbestos, and add these percentages for a statistical representation of the content.

## 5.2 LEAD

EPA SW-846 determines details and methods for the determination of metals in solids, including lead, cadmium, chromium, zinc and arsenic.

Solid samples are homogenized, weighed and digested in nitric acid. This digestate is brought to a known volume and analyzed for various metals using atomic absorption spectroscopy (AS), Graphite furnace (GF) or inductively coupled plasma spectroscopy (CPS). The instrument detection limits (IDL) for lead and metals are both 0.25 ug/ml with the actual sample detection limit dependent on the sample size and volume.

The result is then compared to the standard for lead-based (or other metals) paint divided by the number of sub-samples (the composite standard). If the result is above this number, one or more of the samples may be above the standard. Each sub-sample is reanalyzed. If the result is below this number, none of the sub-samples can contain lead above the standard. If both single-surface and composite samples are collected side-by-side, the individual samples can be submitted for analysis without returning to the building if the composite result is above the composite standard. If the laboratory does not analyze the entire composite sample, it must use a validated homogenizing technique to ensure that all sub-samples are completely mixed together.

## 6.0 DATA ANALYSIS

Two types of data are generated during an asbestos and/or lead in paint building inspection; the field data and the laboratory data. The field data consists of research on the building history, observation and identification of installed building materials, and measurements to determine quantities. The laboratory data consists of empirical observation through instrumentation, identification and quantification of sample information.

### 6.1 HISTORICAL RESEARCH

The historical research allows the inspector to compile information that is used to discover and verify the existence of asbestos or lead in building materials. Maintenance and asbestos abatement records, blueprints, as-builts, specifications and emergency response documents are examples of the data used. Once the inspector arrives at the site, the visual inspection begins, usually at the basement level and proceeding throughout the building and ending up on the roof. The inspector is looking for suspect materials and damage to same. This information will be used later to provide a physical assessment of the materials found.

### 6.2 LABORATORY

The laboratory data is reported, usually in tabular format, to the inspector. In the table, the inspector finds information on the fibrous and non-fibrous constituents in the sample, reported as percentages of the total material. If asbestos is discovered, the table will describe the geologic type (such as chrysotile) and which layer it was discovered in. Other common fibrous constituents are fiber glass, rock wool and nylon.

The historical research allows the inspector to compile information that is used to discover and verify the existence of various metals in the building and facility components. Maintenance, renovation, and abatement records, along with blueprints, as-builts and specifications are examples of documents reviewed for this purpose. Once the inspector arrives at the site, the physical inspection begins, usually at the lowest level of the structure and ending up on the roof. The inspector is looking for suspect materials and verifying the existence of materials discovered during the historical research.

In the case of lead in paint, the lab data is usually reported in tabular form to the inspector. In the table, the inspector will find information on the percentage or portion per sample that contains the suspect metal. Should the sample not contain any suspected metals. This information will be included in the report.

## 7.0 SUMMARY

The inspector compiles the field and lab data, cross-matches information, eliminates non-asbestos and/or lead containing materials from the suspect list, and generates a report on the findings. The report consists of an executive summary, location and description of both asbestos and non-asbestos, and/or lead (metals) containing building materials either sampled or assumed, estimated quantities of same, physical assessment of the friable asbestos containing materials, location of samples acquired, photographs of sample locations and damaged materials, and blueprints indicating sample locations and homogeneous areas that contain asbestos and/or lead.

## 8.0 QUALITY ASSURANCE

Quality assurance for the asbestos and lead characterization of the T891 Trailer Cluster begins by assessing the procedure through the data quality objectives (DQO) process document. The veracity of the methodology also requires that data acquired during the inspection process be checked.

THE EPA QA/G-4 process begins with a statement of the problem, which is outlined in Section 1.0. Step two, identify the decision, is covered in Section 2.0. Steps 3, 4, 5, and 6 are driven by aforementioned regulatory requirements or guidelines. The expert and diverse rationale used to develop these parameters are sufficient to preclude evaluation or selection of any alternatives. The methodologies inherent in these procedures have been accepted industry standards and tested in courts of law and need only to be applied on a site specific basis with the input from qualified individuals.

Both the field and laboratory data are verified for accuracy and consistency. Each sample location is verified for representative quality and the sampler verifies that the sample size or volume meets the analytical requirements, and that the sample includes depth to substrate. Sample numbers are continually cross-checked to avoid redundancy or omissions. Administrative and engineering controls are used in this process. Administrative controls include the mandate that all inspectors and lab analysts meet all applicable regulatory training certification and licensing requirements.

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## 8.1 FIELD DATA

In the field, the inspector acquires quality control (or duplicate) samples at the rate of five percent. Sample locations are chosen randomly and a second sample is acquired at the same location. This sample is sent to the same lab for analysis. Should discrepancies occur, the issue is resolved by retracing the steps back to the sample acquisition point and following the process back to the lab. If the issue is still unresolved, the inspector will acquire an additional sample to be sent to a different lab. In addition to APO is required to validate laboratory data at the rate of 25%.

## 8.2 LAB DATA

In the lab, the analyst uses the same five percent criteria in performing quality control procedures for asbestos as outlined in the NVLAP program. Samples are randomly chosen and another analyst re-assesses the sample. Results are compared, and discrepancies are resolved. All mathematical calculations are verified through peer review.

For lead samples in the lab, the analyst is bound by protocol for quality assurance outlined in EPA SW-846 and requirements set out by the National Lead Laboratory Accreditation Program. All laboratory calculations are verified through peer review.

## 8.3 COMPARISON/MATCHING

A last step in quality assurance involves the comparison of field and lab data. The sample numbers and descriptions are checked against each other to verify that the lab saw the same material as the inspector. Problems may occur due to transposition of number sequences, and this is resolved by checking the field data sheets against the chain of custody and the lab report. Minor differences in the physical descriptions are allowed due to the fact that lighting in the building may be different than that in the lab. Major differences in descriptions are often traced back to the number transposition issue. In order to avoid this issue, inspectors will use pre-printed labels on the field data sheet, sample container, and chain of custody document.

## 8.4 PEER REVIEW

Finally, the report itself is passed through peer review. This process assures the final product will be free of technical, grammatical, and mechanical errors prior to being passed on to the client or being used as a basis for future operations in the building such as abatement, maintenance, renovation, or demolition.

## 9.0 REFERENCES

EPA 40 CFR 763, Asbestos-Containing Materials in Schools; Final Rule and Notice, October 30, 1986

OSHA 29 CFR 1926.1101, Asbestos Construction Standard, August 10, 1994

Emission Standards for Asbestos, Excerpted from Colorado Regulation No. 8, "The Control of Hazardous Air Pollutants", Part B, Emission Standards for Asbestos, November 30, 1996

EPA Method SW 846-3050A/7420, Atomic Absorption Spectrometry

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OSHA 29 CFR 1926.32, Lead Exposure in Construction, Interim Final Rule, June 1989

HUD Guidelines for the Evaluation and Control of Lead-Based Paint Hazards in Housing, June, 1995.

EPA QA/G-4 The Data Quality Objectives Process, Quality Assurance Management Staff, Draft Final, March 3, 1994.

**ATTACHMENT 7.4**

**Reconnaissance Level Characterization Plan for the T891 Cluster Trailer Removal Project**

**August 1997**

INFORMATION  
ONLY



Rocky Mountain  
Remediation Services, L.L.C.  
*. . . protecting the environment*

RF/RMRS-97-058

# **Reconnaissance Level Characterization Plan For The T891 Cluster Trailer Removal Project**

**AUGUST 1997**

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**RECONNAISSANCE LEVEL CHARACTERIZATION PLAN  
FOR THE T891 CLUSTER TRAILER REMOVAL PROJECT**

**August 1997**

**This Reconnaissance Level Characterization Plan has been reviewed and approved by:**

  
\_\_\_\_\_  
Ty Vess, Project Manager

8-19-97

\_\_\_\_\_  
Date

**This Reconnaissance Level Characterization Plan was  
prepared by:**

  
\_\_\_\_\_  
Kirk K. Hilbelink, Project Scientist

19 Aug 97

\_\_\_\_\_  
Date

# INFORMATION ONLY

## RECONNAISSANCE LEVEL CHARACTERIZATION PLAN FOR THE T891 CLUSTER TRAILER REMOVAL PROJECT

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## ACRONYMS

AHA	Activity Hazard Analysis
Be	Beryllium
DOE	U. S. Department of Energy
DOP	Decommissioning Operations Plan
DQO	Data Quality Objective
EPA	U. S. Environmental Protection Agency
OSHA	Occupational Safety and Health Administration
PCB	polychlorinated biphenyls
PU&D	Property Utilization and Disposal
RCRA	Resource Conservation and Recovery Act
RESI	Reservoirs Environmental Services, Inc.
RFETS	Rocky Flats Environmental Technology Site
RFFO	Rocky Flats Field Office
RLC	Reconnaissance Level Characterization
RLCR	Reconnaissance Level Characterization Report
RMRS	Rocky Mountain Remediation Services, L.L.C.
RWP	Radiological Work Permit
SOW	Statement of Work

## 1. INTRODUCTION

The Department of Energy (DOE) has established a goal of reducing the total built square footage at the Rocky Flats Environmental Technology Site (RFETS) by 2% in FY97. The T891 Cluster was chosen for removal as a part of the 2% reduction. This project will help RFETS management reduce operating costs and hazards.

The T891 Trailer Cluster is comprised of prefabricated trailers (A, L, M and N) located in the south east portion of RFETS (Figure 1-1). Trailers T891A, L, M, and N are portable office trailers measuring twelve (12) feet wide by sixty (60) feet in length. The trailers are constructed of materials similar to those used in mobile homes. All trailers are powered by the Site electrical power distribution system. Trailers T891A and T891M have domestic water and sewer connections. No Individual Hazardous Substance Site, Areas of Concern, or Under Building Contamination have been identified with respect to the removal of the T891 Cluster facilities.

Trailer T891A was brought to the Site in 1990 as a field office for the construction of the 881 Hillside Interim Measure/Interim Remedial Action Project. The trailer has been used for office space and recently housed Radiological Engineering personnel. While some radioactive materials have been present in the trailer, no hazardous wastes or materials were ever handled or used at this facility.

Trailers T891L and T891M have been used by the Site Surface Water Program and the previous Environmental Restoration Soil Sciences Program. The trailers have primarily been used to support field sampling activities and have also been used as field laboratories. T891N has been used to house construction project personnel, and to a lesser extent, to support field sampling activities by site subcontractors.

Trailer T900E is a semi-trailer that contains soil vapor extraction treatment equipment. This trailer, called the Soil Vapor Extraction Unit, was used to treat soils affected by volatile organic compounds emitted from Trench 3 at Operable Unit Number Two. Trailer T900E measures eight (8) feet in width and forty (40) feet in length.

The T891 Cluster Removal Project will include:

- Removal of T891A, L, M, and N, and relocation to Property Utilization and Disposal (PU&D) for reuse at other government facilities; and
- Removal of T900E and relocation to a Government auction for sale to the public.

### 1.1 PURPOSE

The purpose of this characterization plan is to outline the data requirements and methodology for characterization of the T891 Cluster. The characterization effort identifies the type, quantity, condition, and location of radioactive and hazardous materials which are, or may be, present as residual contamination in the subject facilities. The compilation of facility information contained herein, in conjunction with the T891 Cluster project files established during this investigation, combines pertinent data from various sources to serve as a practical reference for project use during decontamination and decommissioning efforts.

### 1.2 SCOPE

This document was prepared using the draft Decommissioning Protocol procedure to ensure the

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North

PROTECTED AREA

East

South

891 TRAILERS

371 374 771 776 777 779 707 750 559 460 444 440 664 830 881 883 865 991 130

T891N T891L T891M T900E T891A

## 891 TRAILERS

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# INFORMATION ONLY

## RECONNAISSANCE LEVEL CHARACTERIZATION PLAN FOR THE T891 CLUSTER TRAILER REMOVAL PROJECT

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data quality objective (DQO) process was used in determining sampling/survey requirements. The information presented in this plan specifically pertains to the T891 Cluster; the review of historical records and the collection of process knowledge information covering the operational time period for the facility from original construction to present. The scope of this document is to gather an appropriate amount of characterization information to develop the Reconnaissance Level Characterization Report for the T891 Cluster Trailer Removal Project (RLCR).

### 1.3 DATA LIFE CYCLE

The data life cycle, as it applies to the characterization process, is composed of three aspects: Planning, Implementation, and Assessment. To produce a usable document (i.e., an RLCR), each of the three must be applied in sequence.

The planning process uses DQOs (Section 2.1) to determine data needs, quality and survey design. This document is the initial planning phase for characterization activities.

The second phase of the characterization process is implementation. This phase includes the assessment of historical documentation concerning the operations of the facilities and any associated chemical or radiological inventory. Additionally, a physical survey is accomplished using the design as outlined during the planning phase.

The final phase of the life cycle is the assessment of information gathered during the implementation phase. The data is evaluated against DQO criteria and a report is developed that outlines results and conclusions.

The following section is the result of the planning process for the T891 Cluster.

## 2.0 PLANNING

To ensure the collection of usable data it is necessary to formulate the objectives of the project. For this plan, the DQO process was used by answering questions designed to follow the seven-step process for a decommissioning project. The results of this DQO process are presented in the following sections.

### 2.1 CHARACTERIZATION OBJECTIVES

The reconnaissance level characterization (RLC) objectives are based on questions presented in Sections 6.0 and 6.1 of the draft *Decommissioning Characterization Protocols* (DOE 1997).

This plan was developed to specify the data collection requirements necessary to provide a baseline of information for use during decommissioning activities. The information obtained by implementing this plan will be compiled into the Reconnaissance Level Characterization Report (RLCR). Ultimately, the data may be used to determine the risks to the environment and personnel during these activities (dismantling, decommissioning, etc.).

The following questions and answers were used to develop the sampling requirements for this project.

#### 1. What is the end use of the facility or structure?

- T891A, L, M, and N will be removed and relocated to PU&D for reuse at other government

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agencies.

- T900E will be sent to a Government auction for sale to the public.
2. **What types of chemical, physical/biological, or radiological hazards are being evaluated?**

The following hazards were evaluated for their presence in the T891 Cluster:

Asbestos  
PCBs  
Excess Chemicals  
Lead  
Beryllium  
Radioactive materials

3. **What level of worker protection is required to perform characterization in the facility, structure or environs?**

No special protective clothing will be worn to remove the trailer contents or to complete radiation surveys. Safety shoes and safety glasses will be worn for all decommissioning activities. Other protective measures are identified in the job specific Radiological Work Permit (RWP) or Activity Hazard Analysis (AHA).

No unique or special protective clothing is required.

4. **What type of instrumentation is required?**

Radiological instrumentation is identified in Appendix B.

Non-radiological materials will be analyzed in a laboratory. The specific instrumentation is identified in the applicable lab procedures.

5. **Have all facility structural data been reviewed?**

All the available historical and facility information has been reviewed. A copy of this information is stored in the project file.

6. **Have all suspect materials been identified?**

Yes. Additional characterization of the suspected material is identified in this plan.

7. **Do regulatory and statistical drivers exist for sampling frequency?**

No known statistical drivers exist for sampling frequency for reconnaissance-level information.

8. **Why is this characterization information being obtained?**

The reconnaissance level characterization information is being obtained to establish a baseline of hazards within the T891 Cluster. The baseline information will be summarized and presented to the DOE/Rocky Flats Field Office (RFFO) in a Reconnaissance Level

Characterization Report. The DOE/RFFO uses the RLCR to determine the need for a Decommissioning Operations Plan (DOP).

**9. What decisions will be made from use of the data obtained for this plan?**

The decision which will be made using this information is:

Is a DOP required (or not required) for the T891 Cluster?

The information will also be used to identify decontamination and abatement requirements.

**10. What information is required to make the decision?**

A baseline of the hazards within the T891 Cluster is required. The types of hazards are identified in the answer to Question #2.

**11. What is the scope of this data gathering effort?**

This scope of this characterization is identified within the individual hazard discussions. (Section 3).

**12. What is the basis for the decision?**

The decision to require a DOP is somewhat arbitrary, and is based on the perceived risk associated with the identified hazards. The decision is made by the DOE/RFFO.

**13. What are the limits on decision errors?**

This question does not apply to the RLC, since no specified criteria or limits exist upon which decisions are based.

**14. How will the survey design be optimized?**

If the DOE/RFFO decides that not enough characterization information exists (based on review of the RLCR), additional information will be requested.

### **3.0 IMPLEMENTATION**

This section provides information necessary to implement the requirements of the planning (DQO) task of this project.

#### **3.1 HISTORICAL ASSESSMENT**

Based on the review of available historical information and discussions with past and current residents of the T891 Cluster facilities, it was determined that minimal additional sampling and surveys are required. The sampling and survey requirements are stated in the following sections.

##### **3.1.1 Asbestos**

In March 1997, the RMRS IH&S Team members conducted a preliminary inspection of the T891 Cluster for asbestos as a part of the site-wide assessment. T900E was determined to be

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"exempt" from asbestos and lead sampling. As part of this reconnaissance level survey, Trailers T891A, L, M, N, and T900E will be inspected for asbestos and lead. All work will be conducted in accordance with the Asbestos Hazard Emergency Response Act (AHERA). Samples will be submitted to Reservoirs Environmental Services, Inc. (RESI) for analysis by Polarized Light Microscopy (PLM). The follow-up survey will be completed by a certified building inspector.

### 3.1.2 Lead Paint

Bulk paint samples will be collected from T891A, L, M and N, and submitted to RESI for lead analysis utilizing Atomic Absorption Spectroscopy (EPA method SW846-3050A/7420). Samples will be collected from ceiling, door, siding, skirting, wall, and stair surfaces.

### 3.1.3 Beryllium

Based on a review of historical data, there is no evidence that beryllium (Be) was used in the T891 Cluster. Therefore, no Be sampling will be required under this plan.

### 3.1.4 Radioactive Materials

Based on a review of historical data, areas within the T891 Cluster are suspect of radioactive contamination. Biased radiological surveys will be conducted in accordance with specific characterization instructions defined in Appendix A.

Radiological instrumentation (portable and fixed) for making direct field measurements and laboratory analysis respectively will be utilized during characterization activities and will be implemented in final survey activities. Instrumentation that is reliable, suited to the physical conditions at the site, and capable of detecting the radiations of concern (at the required detection levels) will be chosen. Instrumentation that may be used for this project is presented in Appendix B. Additional equivalent instrumentation may be used if approved by radiological engineering.

### 3.1.5 Hazard Assessment

An assessment of the hazards that may be encountered during specific decommissioning activities has been performed through walkdowns and job safety analyses. This information will be incorporated into the planning process of each activity to ensure maximum protection of the worker.

### 3.1.6 Hazardous Waste

Currently, no hazardous waste is stored in the facilities. Hazardous product material identified during facility inspections will be removed prior to commencement of decommissioning activities.

### 3.1.7 Polychlorinated biphenyls (PCBs)

PCBs may be present in fluorescent light ballast. The fluorescent lights and ballast will be removed and disposed of according to RFETS procedures as required.

### 3.1.8 Excess Chemicals

All chemicals have been removed from the T891 Cluster facilities during the deactivation process with the exception of some paints and cleaning solvents, which will be disposed by the

subcontractor. Since no known areas demonstrate a buildup of chemical residue, no special chemical characterization is anticipated.

Chemicals discovered during the decommissioning process will be handled in accordance with existing chemical identification and handling procedures. No Resource Conservation and Recovery Act (RCRA) units are associated with this project, therefore, no closure plans are required.

## 4.0 ASSESSMENT

The assessment stage of the T891 Cluster data life cycle will include an evaluation of data and any conclusions that may be drawn from the data. The information collected will be detailed in the characterization report.

### 4.1 DATA EVALUATION

Data will be evaluated for completeness and adherence to the appropriate protocols.

## 5.0 REFERENCES

DOE/EM-0142P, *Decommissioning Handbook*

DOE, 1997 *Draft Decommissioning Characterization Protocols*, June.

MARSSIM - *Draft Multi-Agency Radiation Survey and Site Investigation Manual*

NRC, *Draft NUREG/CR5849 - Manual for Conducting Radiological Surveys in Support of License Termination*.

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## APPENDIX A RADIOLOGICAL SURVEY INSTRUCTIONS

**COPY**

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**INFORMATION**

**T900E Characterization Survey Radiological Instructions**

Location/Room: T900E Semi-Trailer

Item/Area Description <sup>1</sup>	Radiological Survey <sup>2</sup>		Scan Survey <sup>3</sup>	Special Instructions
	# of Alpha/Beta Swipes	# of Direct Alpha/Beta Measurements		
Floors	20	20	N/A	Obtain measurements on floor surfaces throughout the room
HEPA Filter System	A minimum of 5 measurements	A minimum of 5 measurements	N/A	Obtain measurements on accessible interior surfaces of the HEPA system
Misc. Tanks, Blower, Table, etc.	A minimum of 1 measurement per component	A minimum of 1 measurement per component	N/A	Obtain measurements on accessible surfaces of each component

**Notes**

<sup>1</sup> See attached map of building layout.

<sup>2</sup> Surveys to be performed in accordance with 4-K62-ROI-03.01, "Performance of Surface Contamination Surveys". Other radiological references are: 1-P73-HSP-18.10, "Radioactive Material Transfer and Unrestricted Release of Property and Waste", 4-S23-ROI-03.02, "Radiological Requirements for Unrestricted Release", and 4-N83-REP-1108, "Radioactive Material Management Area (RMMA) Determination".

<sup>3</sup> Perform an alpha/beta scan survey of the percentage of the accessible surfaces, including fixed equipment, as listed.

**Review and Approval**

Prepared By: \_\_\_\_\_

Date: \_\_\_\_\_

8/6/97

Reviewed By: \_\_\_\_\_

Date: \_\_\_\_\_

8/6/97

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RECONNAISSANCE LEVEL CHARACTERIZATION  
PLAN FOR THE T891 CLUSTER  
TRAILER REMOVAL PROJECT

RF/RMRS-97-058  
Rev. 0, Page 12 of 12  
Date Effective: 08/19/97

APPENDIX B  
RADIOLOGICAL INSTRUMENTATION

Instrument	Count Type	Allowable Background Counts	Acceptable Application	MDA (dpm/100 cm <sup>2</sup> )
Bicron w/ A100 Probe	60 sec. (alpha)	2	Direct Alpha Surveys	55
Bicron w/ B50 Probe	60 sec. (beta)	250	Direct Beta Surveys	610
NE Electra W/ DP6 Probe	60 sec. (alpha)	2	Direct Alpha Surveys	60
	60 sec. (beta)	700	Direct Beta Surveys	455
Eberline SAC-4	60 sec. (alpha)	1	Removable Alpha Swipes	18
Eberline BC-4	60 sec. (beta)	200	Removable Beta Swipes	205
LB-5100LW	60 sec. (alpha)	0.5	Simultaneous Removable Alpha and Beta Swipes	20
	60 sec. (beta)	4		35

~~Post 24 13~~  
~~West 13 45~~

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INFORMATION  
ONLY

Trailer 891M Removal Project  
Characterization Survey Radiological Instructions

Location/Room: T891M

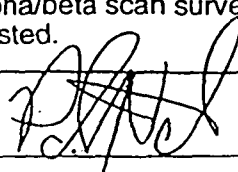
Item/Area Description <sup>1</sup>	# of Alpha/Beta Swipes <sup>2</sup>	# of Direct Alpha/Beta Measurements <sup>2</sup>	Scan Survey <sup>3</sup>	Special Instructions
Floor	10	10	N/A	Obtain measurements on floor surface throughout the trailer with bias in lab area
Sink Drain	A minimum of one measurement inside each sink	A minimum of one measurement inside each sink	N/A	Obtain measurements on accessible surfaces of sinks
Desk, File Cabinets, etc.	A minimum of one measurement per component	A minimum of one measurement per component	N/A	Obtain measurements on accessible surfaces of components
Trailer Exterior	2 per side and roof	2 per side and roof	N/A	Obtain measurements on exterior surfaces

Notes

<sup>1</sup> See attached trailer layout

<sup>2</sup> Surveys to be performed in accordance with 4-K62-ROI-03.01, "Performance of Surface Contamination Surveys". Other radiological references: 1-P73-HSP-18.10, "Radioactive Material Transfer and Unrestricted Release of Property and Waste", 4-S23-ROI-03.02, "Radiological Requirements for Unrestricted Release", and 4-N83-REP-1108, "Radioactive Material Management Area (RMMA) Determination".

<sup>3</sup> Perform an alpha/beta scan survey of the percentage of accessible surfaces, including fixed equipment, as listed.

Prepared By: 

Date: 8/4/97

Reviewed By: 

Date: 08/04/97

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East Door 24 on 13  
West 13 on 45

Trailer 891N Removal Project  
Characterization Survey Radiological Instructions

Location/Room: T891N

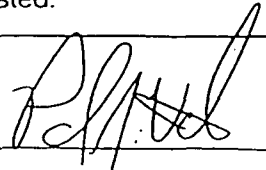
Item/Area Description <sup>1</sup>	# of Alpha/Beta Swipes <sup>2</sup>	# of Direct Alpha/Beta Measurements <sup>2</sup>	Scan Survey <sup>3</sup>	Special Instructions
Floor	10	10	N/A	Obtain measurements on floor surface throughout the trailer
Sink Drain	A minimum of one measurement inside each sink	A minimum of one measurement inside each sink	N/A	Obtain measurements on accessible surfaces of sinks
Desk, File Cabinets, etc.	A minimum of one measurement per component	A minimum of one measurement per component	N/A	Obtain measurements on accessible surfaces of components
Trailer Exterior	2 per side and roof	2 per side and roof	N/A	Obtain measurements on exterior surfaces

Notes

<sup>1</sup> See attached trailer layout

<sup>2</sup> Surveys to be performed in accordance with 4-K62-ROI-03.01, "Performance of Surface Contamination Surveys". Other radiological references: 1-P73-HSP-18.10, "Radioactive Material Transfer and Unrestricted Release of Property and Waste", 4-S23-ROI-03.02, "Radiological Requirements for Unrestricted Release", and 4-N83-REP-1108, "Radioactive Material Management Area (RMMA) Determination".

<sup>3</sup> Perform an alpha/beta scan survey of the percentage of accessible surfaces, including fixed equipment, as listed.

Prepared By: 

Date: 8/4/97

Reviewed By: 

Date: 08/04/97

INFORMATION

Trailer 891A Removal Project  
Characterization Survey Radiological Instructions

Location/Room: T891A

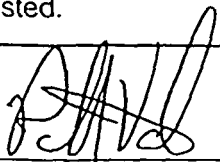
Item/Area Description <sup>1</sup>	# of Alpha/Beta Swipes <sup>2</sup>	# of Direct Alpha/Beta Measurements <sup>2</sup>	Scan Survey <sup>3</sup>	Special Instructions
Floor	10	10	N/A	Obtain measurements on floor surface throughout the trailer
Sink Drain	A minimum of one measurement inside each sink	A minimum of one measurement inside each sink	N/A	Obtain measurements on accessible surfaces of sinks
Desk, File Cabinets, etc.	A minimum of one measurement per component	A minimum of one measurement per component	N/A	Obtain measurements on accessible surfaces of components
Trailer Exterior	2 per side and roof	2 per side and roof	N/A	Obtain measurements on exterior surfaces

Notes

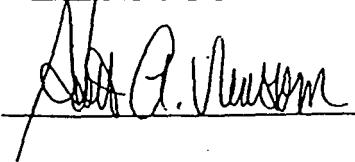
<sup>1</sup> See attached trailer layout

<sup>2</sup> Surveys to be performed in accordance with 4-K62-ROI-03.01, "Performance of Surface Contamination Surveys". Other radiological references: 1-P73-HSP-18.10, "Radioactive Material Transfer and Unrestricted Release of Property and Waste", 4-S23-ROI-03.02, "Radiological Requirements for Unrestricted Release", and 4-N83-REP-1108, "Radioactive Material Management Area (RMMA) Determination".

<sup>3</sup> Perform an alpha/beta scan survey of the percentage of accessible surfaces, including fixed equipment, as listed.

Prepared By: 

Date: 3/4/97

Reviewed By: 

Date: 03/04/97



**Trailer 891L Removal Project  
Characterization Survey Radiological Instructions**

**Location/Room: T891L**

<b>Item/Area Description<sup>1</sup></b>	<b># of Alpha/Beta Swipes<sup>2</sup></b>	<b># of Direct Alpha/Beta Measurements<sup>2</sup></b>	<b>Scan Survey<sup>3</sup></b>	<b>Special Instructions</b>
Floor	10	10	N/A	Obtain measurements on floor surface throughout the trailer
Sink Drain	A minimum of one measurement inside each sink	A minimum of one measurement inside each sink	N/A	Obtain measurements on accessible surfaces of sinks
Desk, File Cabinets, etc.	A minimum of one measurement per component	A minimum of one measurement per component	N/A	Obtain measurements on accessible surfaces of components
Trailer Exterior	2 per side and roof	2 per side and roof	N/A	Obtain measurements on exterior surfaces

**Notes**

<sup>1</sup> See attached trailer layout

<sup>2</sup> Surveys to be performed in accordance with 4-K62-ROI-03.01, "Performance of Surface Contamination Surveys". Other radiological references: 1-P73-HSP-18.10, "Radioactive Material Transfer and Unrestricted Release of Property and Waste", 4-S23-ROI-03.02, "Radiological Requirements for Unrestricted Release", and 4-N83-REP-1108, "Radioactive Material Management Area (RMMA) Determination".

<sup>3</sup> Perform an alpha/beta scan survey of the percentage of accessible surfaces, including fixed equipment, as listed.

Prepared By: \_\_\_\_\_

Date: \_\_\_\_\_

Reviewed By: \_\_\_\_\_

Date: \_\_\_\_\_

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